This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

NATIONAL RIFLE-SHOOTING MATCH.

THE

ROYAL RIFLE MATCH

ON

WIMBLEDON COMMON;

54

WITH SPECIALITIES OF RIFLES AND RIFLE AMMUNITION, AND A FULL ACCOUNT OF

I. WHAT HAS BEEN DONE IN COMPETITIVE RIFLE-SHOOTING.
II. WHAT IS DOING THROUGHOUT THE NATION.
III. WHAT SHOULD BE DONE IN FUTURE.

ALSO, A FULL DESCRIPTION OF NEW LUBRICANTS, AND A CRITICISM ON THE SWISS AND ENGLISH STYLES OF RIFLE-SHOOTING.

By JOHN SCOFFERN, M.B.

AUTHOR OF "PROJECTILES," &c., LATE PROFESSOR OF CHEMISTRY AT THE ALDERSGATE COLLEGE OF MEDICINE.

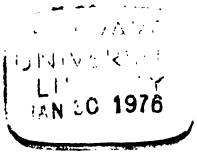
LONDON: WARD AND LOCK,
165, FLEET STREET.

MDCCCLX.

1860

Digitized by Google

SG 22271



Digitized by Google

THE ENFIELD RIFLE, REVOLVERS, AND BREECH-LOADING GUNS.

PARKER, FIELD AND SONS,

ARE NOW MANUFACTURING

THE ENFIELD RIFLE AND CARBINE FOR HER MAJESTY'S WAR DEPARTMENT:

AND ALSO

DOUBLE BARREL RIFLES AND RIFLED CARBINES CARRYING THE GOVERNMENT AMMUNITION.

IMPROVED REVOLVING PISTOLS

With their Patent Spring Ramrod, and interlocking motion of the Chambers.

IMPROVED BREECH-LOADING

Arms and Fowling Pieces, Guns, Pistols, and Rifles of all Descriptions.

AIR-GUNS.

PARKER, FIELD, & SONS,

RIFLE MAKERS TO HER MAJESTY, THE HON. EAST INDIA COMPANY, &C.
RIFLE MAKERS TO H. R. H. THE PRINCE CONSORT.

No. 233, HIGH HOLBORN, LONDON.

MANUFACTORY, 58, MANSELL STREET, MINORIES.

ESTABLISHED NEARLY 100 YEARS.

P., F. & Sons are also Contractors to the Police for Truncheons, Cutlasses, Pistols, Handcuffs, and all articles used by Police.

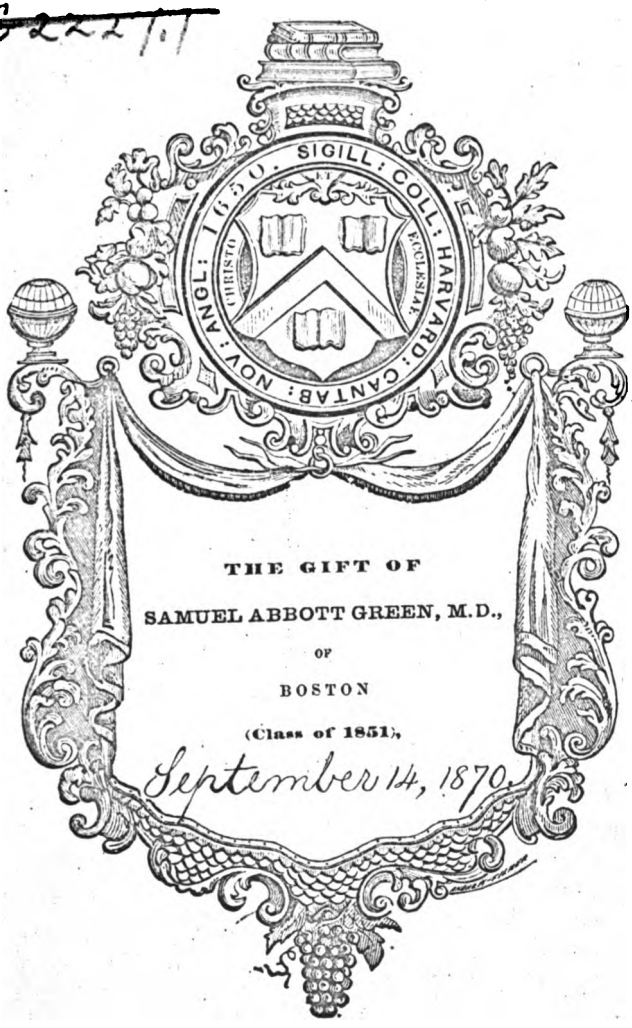
Digitized by Google

Digitized by Google

34·163

Bd. Nov. 1871.

SC 2221.1



Digitized by Google

Digitized by Google

Digitized by Google

NATIONAL RIFLE-SHOOTING MATCH.

REPORT

OF THE

ROYAL RIFLE MATCH

ON

WIMBLEDON COMMON;

WITH SPECIALITIES OF RIFLES AND RIFLE AMMUNITION, AND A FULL ACCOUNT OF

I. WHAT HAS BEEN DONE IN COMPETITIVE RIFLE-SHOOTING.
II. WHAT IS DOING THROUGHOUT THE NATION.
III. WHAT SHOULD BE DONE IN FUTURE.

ALSO, A FULL DESCRIPTION OF NEW LUBRICANTS, AND A CRITICISM ON THE SWISS AND ENGLISH STYLES OF RIFLE-SHOOTING.

BY JOHN SCOFFERN, M.B.

AUTHOR OF "PROJECTILES," &C.

LONDON: WARD AND LOCK,

158, FLEET STREET.

Digitized by Google

~~SG 2227.1~~

SG 2227.1

1870, Sept. 14.
Gift of
Saml. A. Green, M.D.
of Boston.
(H. U. 1851.)

LONDON:
HENRY VIZETELLY, PRINTER AND ENGRAVER,
GOUGH SQUARE, FLEET STREET.

Digitized by Google

DEDICATION.

To Rifle Schoolmaster Hay of Hythe,

IN

GRATEFUL RECOGNITION OF THE ASSIDUITY AND SUCCESS

WHEREWITH

HE HAS TAUGHT THE YOUNG BRITISH IDEA

HOW TO SHOOT,

THIS BOOK, OR TRACT, OR PAMPHLET,

IS RESPECTFULLY DEDICATED,

BY ONE WHO HAS NEVER SPOKEN TO HIM,

BUT WHO

APPRECIATES HIS LABOURS.

Digitized by Google

Digitized by Google

PREFACE.

It has been the custom time out of mind for authors about to commence a literary labour of love, to invoke the patronage of some appropriate god, goddess, or muse. Homer did it, and Virgil too; and our own immortal Milton, as is well known.

If men, godlike almost in power themselves, felt it thus well to seek celestial aid, how much more needing the kind offices of gods, goddesses, and muses, am I? So far as history records, it does not seem that Homer was any way hurried in his work; and I never could learn that a legion of printer's devils were ever let loose to worry the bard of Mantua. Virgil had ample time to write *his* copy; and write it deliberately he did, in fair Italian hand. As for Milton, though blind, he had the luxury of a fair amanuensis. No eyes had he to dim; his hand could never tire.

But here, at 11 A.M., in this day of grace the ninth of

Digitized by Google

July, am I, broken by recent illness, exhausted by recording for two morning newspapers the professional doings of our grand "tir national;" sleepy as one needs must be who has not slept eight hours during the entire week gone by; replete with dining overmuch; and half jolted to death by travelling in a cabbage cart from Putney to Covent Garden, at 3 A.M., because, like many others at Wimbledon, I overshot the mark—missing, not my aim, but my train: here am I, pledged to write a book in eight and forty hours!* Gods, goddesses, and muses, satyrs, demi-gods, and fauns, I would fain implore ye all. Yes, even the ——!

Olympus and Pandemonium being thus invoked, I would now implore on behalf of mortals a meed of consideration. That which I have arranged to do I *must* do. My publisher is a man who stands no nonsense; and if you offend him, fights. He is of quick temperament and hot blood. He wastes no words, but comes to the point; in proof of which I do not apologise for setting before you a billet-doux found in my letter-box, on returning from Wimbledon last night.

"DEAR SIR,—First copy on Monday at 12 P.M.; last copy on Tuesday at 10 A.M.

"Yours ever truly."

* This, besides two leaders to which I am pledged; two Wimbledon reports; and such eating, drinking, and sleeping as one needs must get.

Digitized by Google

Like a donkey's gallop, short and sweet: few words but expressive.

I beg, reader, you will not misunderstand me. Pardon any little roughness of diction or inequalities of style, it shall be enough. I implore your consideration for no more. One of our classical novelists devotes a page in proof of the seeming truism that a man writes none the worse for knowing what he is to write about. Now, without any self-laudation, I *do* know something of what I am to write about. Though not exactly born with a rifle in my hand, as was said of Mr. Ross yesterday, I was a deer-stalker at thirteen. I wrote on the subject of projectiles long before rifle practice was the popular sport I am happy to see it now. From first to last, there are few, if any, rifles of any note that I have not either fired, or seen fired. From first to last, there are few books on this subject (saving my own) which, in literary organs of high standing, I have not reviewed. Probably, then, it may seem that even the hurried jottings of forty-eight hours, committed to print by one who has enjoyed good opportunities, ought not to be quite foolish, if the writer be not quite a fool.

Frankly, I was not at Wimbledon on Monday, and the opening day. The pageant, as newspapers inform me, was wonderfully fine; the ladies looked charmingly

Digitized by Google

pretty, and Her Gracious Majesty shot admirably well. For myself, I can admire pretty women, thank God; and no person exceeds me in the respect I bear to Her Majesty. But this little book is not to be written that the beauty of England may be extolled; far less to note the specialities of riding habits, or the set of crinoline.

Digitized by Google

REPORT

OF THE

ROYAL RIFLE MATCH.

INTRODUCTORY.

It is all over.* The shots are fired and the prizes won. Victors are being patted on the cheek by fair ladies; not to count those sweet osculatory rewards, of which, time out of mind, it has been deemed ungentlemanlike to tell. It is all over. The joyous wine-cup may now go round. No matter a little unsteadiness of hand to-morrow or to-morrow: let the hand tremble in response to the emotions of the heart. No more bull's-

* This is extracted from *The Morning Chronicle;* but it is mine. I have written what I mean, and cannot mend it. Here too be it understood, that, if the reader meet with paragraphs in this book which he may have before seen—they are always mine. I do not wage merciless war against other people with paste and scissors, like a certain evening paper, which has used my anonymous contributions to a couple of morning papers, without acknowledgment to its earlier contemporaries.

Digitized by Google

eyes at short range, or centres at a thousand. The day has passed—the games are done. From your iron perch come down, Aunt Sally—in the name of peace, come down. No more shall that red apron of yours lure erring bullets to perdition; or swell the treasury of the banker's pool with the tribute of a crown. Butts, and mantelets, and tents, away! Let bleating sheep and lowing kine symbolize the blessings of gentle peace on the lead-besprinkled sod. Let daises raise their drooping heads; kissing the zephyrs that waft away the wreaths of sulphurous smoke.

And be this quick change of scene—this vanishing of butts and tents—this lulling of angry rifle-cracks, and laying of smoke-wreathed ghosts—the signs and emblems of that which a Briton would have, for all time to come. We crave no war, we see no loveliness in it; but, if need so be, we fight. The gage down, the strife inevitable, short, sharp, and decisive may it ever be, then blessed peace again. We crave no conquests: these isles are enough. Neptune himself has given a frontier, in the shape of a broad salt ditch. We seek not to trespass on others' lands, and none must trespass here. We mean no offence; we make no boast—but the salt sea ring-fence of our little patrimony must never be transgressed by any foe, save to his own perdition. It is too late now—very much too late. Schoolmaster Hay, of Hythe, has taken in hand the young ideas of our native land, and taught them how to shoot. And now—should ever hostile feet dare to tread this soil—short, sharp, and decisive must the issue be: quick as speeding

Digitized by Google

picket to hit the blank, or tents, and mantelets, and spars to disappear, the contest over, and the issue known.

To do justice to the splendid practice of last week is not an easy matter. As a flaunting spectacle it was nothing, as hundreds who went to regard it from that point of view have learned to their cost; far otherwise to the real judge and amateur of rifle shooting—to him who knows what the rifle was, and what it has come to be. Comparing military rifle practice now with military rifle practice fifteen years ago, the difference is that between a game of chance and a game of skill, or between rouge-et-noir and chess-playing. We are old enough to remember the time when a military rifleman had to carry about with him, almost as many tools as a travelling tinker; making in loading almost as much noise as him hammering at a pan, and taking more precious moments to charge his piece, than many a Wanstead gipsy would take in mending a tin kettle. We remember the time when military riflemen were taught to scratch the grooves of their barrels to ruin with strokes of a merciless iron ramrod; when shooting at variable distances was expected to be achieved by one unvarying back sight. We remember the time when sixty yard bull's-eyes were deemed good practice; two hundred yards a stupendous hit; and three hundred a myth—a tale to be told to marines only, and almost too marvellous for them. Then, as a wonderful improvement, came the Brunswick two-grooved rifle, with its belted balls; and bad enough they were. Three hun-

Digitized by Google

dred yards a myth now! Why, at double that distance young Edward Ross could rarely miss his man.

We will not scatter about indiscriminate praise. Viewed in the aggregate, the shooting might have been better. Certain picked men, however, have shot with transcendent ability; such as we never saw the like of, and never expect to see excelled. The Swiss have shot well at their usual range of 200 yards; and if their guns are not competent for distances much greater, that is no fault of the shooters. The Swiss crack shots, however, are as far behind *our* crack shots as the power and beauty of Swiss rifles are below the power and beauty of our own rifles. This is conceded by the Swiss themselves; and, as readers of *The Morning Chronicle* are aware, is just what we some time ago predicted. Further remarks we have no time at present to make; but the facts elicited in our rifle contest merit, and shall have, a still further exposition.

POLITICAL ASPECT OF THE VOLUNTEER MOVEMENT.

The fact, perhaps, has never been appreciated, that the establishment of a Volunteer Force, armed and subjected to somewhat loose military allegiance, is only possible in Great Britain and the United States of America. In a republic like the latter, it seems logically and naturally to follow that Volunteers should be the chief military stay. As for the regular army of the United States, it barely amounts to eighteen thousand men, and these in a great measure not Americans born

Digitized by Google

and bred. Still more predominating is the foreign element in the United States marine corps. During my hospitable reception by the officers of the American frigate the Merrimac, in 1856, I was surprised at the number of foreigners, chiefly Germans and Poles, serving in the United States marines. I do not think at the period of my visit to the Merrimac, there was one marine there who had been born and bred in the United States. In point of fact, with the exception of the scientific service of artillery and engineers, regular military service is distasteful to the republicans.

But if a permanent force of volunteers be the natural and logical condition of military power in a pure republic, it is but little consonant with the tendency and genius of monarchs, as monarchical government is understood in Europe out of this happy land. Quite clear is it, that had there not been the most perfect confidence between class and class, the Volunteer movement could never have been permitted in Great Britain. It would have been impossible, as every one must see who consults the records of history, and studies the nature and workings of those powers out of which national commotions are evolved. Were it possible to believe that here, in our native isle, class could ever be arrayed against class; neither listening to reason, and desirous, if possible, to settle their differences by the abitrament of war—the dangers of converting our whole manhood into trained bands, would be great indeed. That the British Government has not only permitted the establishment of Volunteers, but encouraged and

Digitized by Google

fostered them, is an expressive fact. Other nations have studied the bearing of it ere this; perhaps more thoroughly than we. Accustomed from boyhood to enjoy the blessings of constitutional government, an Englishman looks upon it as a matter of course. The right of public meeting and remonstrance open to him, the thought never enters his brain that he and his class may be on some political question so opposed to the Government of the day, as to beget a civil war; and, conversely, so thorough is the conviction on the part of the British Government that the military training and arming of youth can sow the seeds of no injurious strife, that the movement has been fostered and cherished in every possible way.

If the political conditions of this great country are eminently favourable to the existence of a Volunteer force, our financial position is congenial to the movement to a degree no less. Granting the permission and the will, nothing could have been accomplished in the way of forming such a magnificent force of Volunteers as England now can show without ample pecuniary means; those means not to be measured by the amount of money paid, though this is not an inconsiderable sum. The full money sacrifice can only be realized by reflecting on the value of labour in this epoch of commercial activity and mechanical skill. Inspection of a list of the money contributions made in support of the Volunteers, conveys but inadequately the sacrifice made by each in proportion to his ability. The artizan has given his time, *his* capital—that which to him is a thing more precious

Digitized by Google

than a cheque for some ten thousand pounds to many in this land of wealth. The tradesman, the banker, have allowed their establishments to be closed, in order that youths in their service might have the necessary half-day. Artists, men of literature, men learned in the law, have fostered the movement, each in proportion to his means. Shoulder to shoulder men have marched equals, and boon companions for the time, whom the inevitable force of social circumstances would have otherwise kept apart, from cradle to the grave.

The Volunteer organisation is impressive to the reflective mind from its harmonious grandeur; to foreign nations, it must be expressive as making evident to their comprehension the harmonious bonds of sympathy which binds classes together; as showing to how great an extent, under a well-wrought constitutionalism, the license of a republic may go hand in hand, with the splendour—the amenities, the refinement—of a court.

And here is a fitting occasion to inculcate a fact which has often been unnoticed—to award a meed of praise to a class from the components of which it has too sparingly been given.

It would have been almost worth while to have organised Volunteers, were it only to have displayed the good qualities of military men. Members of a venomous school, who, under the garb of peace at any price, cherish the withering poison of cowardice, and call it love, would have nations settle their differences without recourse to war in any shape; but more especially do they set their face against a standing army. There is a class, and not

Digitized by Google

a small class either, who affect to take the assumption for granted that there must be something unfavourable to the expansion of man's finer qualities, in the discipline of military life. Not content with the assumption that a standing army is no better than a hot-bed of nepotism, a place of refuge for aristocratic incompetents—the men of peace at any price, have affected to believe that the tendencies of military training must of necessity cherish and foster, all the human vices. With many a bitter sneer has it been said, that military jealousy and exclusiveness would swamp the Volunteer movement. Well, is it indeed so? Is not the Volunteer force a reality? and if a reality, who more active in past co-operation, who more warm in present approbation, than military men themselves? And who so considerate, and in every way polite, amidst the thronging crowds on Wimbledon Common, as military men? It was worth while to have gone there to look upon the radiant face of General Hay; as, with a bevy of noisy youths around him—laughing, joking, smoking, in a way that would have driven pipe clay frantic outright—he bore their mirthful badinage with smiles and good humour, like the father amidst his family of rollicking boys.

It has been reported to me, though I have not seen it, that the representative of a London newspaper complained of incivility shown to him by the instruction sergeants. I fear that representative, whoever he might be, must have suffered from nightmare, and got up out of sorts. For my part, I saw nothing but civility displayed on the part of every military man on the ground, from

Digitized by Google

the highest to the lowest; and that, too, under very trying circumstances occasionally. Certain it seems to me, that if the police force are to be accepted as the symbol and impersonation of peace—set up for an example, the better to show off the brutality of military men—the comparison will not tell as intended. Incivility on the part of the police I *did* see, and more than once to ladies. "You must go back, marm!" said an exponent of peace in blue, waving authoritatively his hand, "you must go back, marm! Men are first fiddles here—ladies at the opera." Well! the sentiment is not so bad as the mode of conveying it.

PAST RECORDS OF BRITISH VOLUNTEERS.

I surely need not state the fact, that until a late period of British history, our armed force was composed of irregulars; to which, in a certain sense, the designation of Volunteers may be applied. Each feudal lord was bound, by the tenure of his holding, to accompany the sovereign to battle, bringing with him a retinue of horsemen—men-at-arms, as they were called—and archers and pikemen proportionate to his means. I need not repeat the oft-told tale that the long-bow and cloth-yard shafts, were our small-arm projectile weapons. I purpose to introduce the special subject of this little brochure, viz., "the Rifle," in its varieties, by some cursory remarks on the long-bow, its powers and defects; also, on the political and military effects which our prowess with it accomplished. The most complete and philosophic digest which has

Digitized by Google

come under my notice relative to the system of British archery, considered from a military point of view, is that given by the present Emperor of the French in his treatise "*Sur le Passé et l'Avenir de l'Artillerie.*" That the British victory at Creçy was wholly attributable to the prowess of British archers, is well known; not so well a circumstance pointed out by the Emperor of the French, that thenceforward, and in consequence of that victory, the prestige of cavalry declined. Now, there is a political, no less than military significance in this lowering of the esteem in which cavalry had previously been held. Horsemen were gentlemen, and infantry men of inferior degree. Whenever and wherever British archery were not brought to bear, horsemen were omnipotent, and infantry of little avail. During the fourteenth and fifteenth centuries—the golden age of archery in this land, when yeoman or archers were held in such high repute—France, and continental nations generally, treated foot soldiers with disdain. The Emperor of the French, in his systematic book just adverted to, mentions several examples where foot soldiers were ruthlessly cut down and ridden over by their own cavalry—the men-at-arms; not that the infantry fought ill, but that they fought too well. They were slaughtered lest the men-at-arms should have no scope for the exercise of their skill.

English men-at-arms never sullied their fame by cruel acts like these; not that they were better at heart; seeing that human nature is everywhere, and under all circumstances, pretty much alike. English

Digitized by Google

infantry, mainly composed of archers, were far too valuable to be thus used. They bore the first brunt of battle, and not unfrequently decided it. At the time when every other foot soldier in Europe was the merest serf, the British archer was a yeoman. He had a fixed heraldic rank; the first of low degree. He was above the handicraftsman, however skilful,—above the merchant—taking his rank immediately after the gentry. The excellence of British archery, then, tended to bring about a political result; helping to establish that middle-class which, ever since its consolidation, has been one of the sheet-anchors of our glorious constitution.

It has already been intimated that the successes of British archers tended to lower the estimation in which cavalry had been previously held. Many years now ago, I took some trouble in hunting out all the old books and manuscripts I could find treating of military archery. About the period of Elizabeth, many treatises of this sort were published, and they are particularly interesting. The especial interest of them consists in this: Manual fire-arms, clumsy and inefficient, were getting into vogue; and the point was warmly, not to say rancorously discussed, whether manual fire-arms or the long-bow with its arrows were the more efficient military weapons. It is difficult for an impartial reader of these documents to rise from their perusal without arriving at the conviction, that, considered all in all, the long-bow, not the musket, was the better military arm. When we consider the difficulties of

Digitized by Google

loading small fire-arms of ancient date—the necessity of carrying two sorts of powder, one for loading *grained*, another for priming *mealed*, the danger and embarrassments attendant on the use of match-locks and lighted matches, the weight of the arm and of the rest upon which to lean it—the merits of the long-bow will become apparent. As for range, the long-bow in calm and dry weather could make excellent practice at two hundred yards; and bent by favoured arms, still farther. This not only exceeded the powers of ancient musketry, but transcended the abilities of our own Brown Bess, the immediate predecessor of the Minie. The point seems, I think, to have been elicited, that out of an equal number of shots, the musket would wreak more immediate death than the bow. But arrows struck terror, by the very horror of their lingering agonies. This brings us to the notice of a fact, to which preceding remarks have been tending; namely, the profound change of military organization which English archers effected, after the battles of Crecy, Poictiers, and Agincourt, had given a sample of their prowess to the chivalry of Europe. The effects of arrows sticking in horses, are said to have been frightful. This can readily be imagined. A fire-arm bullet can be shot quite through a horse without causing the animal to show one sign of anguish. He goes steadily on his previous course, and makes no sign. However fatal of necessity, a fire-arm bullet gives no immediate pain. Not so the arrow. Planted never so lightly in a horse's neck or flank, the animal grew furious. Starting off

Digitized by Google

... a wild gallop to escape the barbed sting, for ... no respite for his agony. The wilder he ... the pain. Far from the spirit ... he fain would be, sore against his will, ... knight. Plunging and rearing, ... him at last, amidst the dead and ...

... peculiarity of arrow barbs ... launched at the rate of ... each archer's bow—some ... of the powers of this ... the continental men-at- ... archers once, it was ... no more; but, ... the date of the ruin ... light infantry of ... archers came upon ... renown of ... of Europe, ...

... were killed ..., recovered. ... danger- ... of lead. ... fire- ... Not so ... he ex- ... a ... a ... to ...

Digitized by Google

extract a barbed arrow-head even now, with all the appliances of modern surgery at hand. Being desirous of getting some information on arrow-shot wounds, I consulted a book of surgery, written in the reign of Queen Elizabeth, by a surgeon named Clowes. A case of the sort I found, and have transferred it in full to my book on projectile weapons.* The arrow struck a serving man, one Master Withipole, in the leg, a long way, the account states, beyond the distance of the butt, six score yards. It got so firmly imbedded in the bone, that Master Withipole's life was put in peril by the efforts necessary to extract it. Another fatal consequence of arrow wounds on the field of battle was this: Men wounded thus were rarely taken prisoners. Arrows were expensive ammunition. The battle over, detachments were sent out to collect them; and the collection was not done too tenderly. To regain an arrow seemed a far more meritorious act than to save the life of an enemy. The throat of many a wounded wretch was mercilessly cut, that he might be quiet whilst the arrow was being extracted. The defects of archery were these: The ammunition was expensive, and when lost, not easily replaced. The flight of arrows is never correct on a windy day, from whatever direction the wind may blow. Rain relaxes the bow and bow-string, so that archery then is of little use.

All these are serious defects; but there was another of more importance still. When the archer's ammunition was all expended, he was nearly powerless. A

* Longmans.

Digitized by Google

into a wild gallop to escape the barbed sting, the animal had no respite for his agony. The wilder the pace, the greater the pain. Far from the serried squadrons where he fain would be, sore against his will, rushed the mail-clad knight. Plunging and rearing, the steed would throw him at last, amidst the dead and dying; himself to die.

When to this terrible peculiarity of arrow barbs is added their obvious flight—launched at the rate of thirty each minute from each archer's bow—some adequate notion may be formed of the powers of this fearful weapon. Whenever the continental men-at-arms had encountered the English archers once, it was enough. They would stand the ordeal no more; but, dismounting, fought on foot. From the date of the ruin of ancient Rome, there had arisen no light infantry of mark and prowess, until English archers came upon the field; winning for themselves the proud renown of being proclaimed the finest light infantry of Europe, by the present Emperor of the French.

Though comparatively few men or horses were killed by arrow wounds at once, few, nevertheless, recovered. The barbed arrow-head was immeasurably more dangerous, imbedded in the flesh, than a mere lump of lead. Hundreds of men, hale and well to-day, have had fire-arm bullets imbedded in their flesh for years. Not so in the time of archery. The arrow-head must be extracted, or mortification came on, and soon a cruel death. Neither was the surgical process of extraction often happy in the results. It would not be easy to

Digitized by Google

extract a barbed arrow-head even now, with all the appliances of modern surgery at hand. Being desirous of getting some information on arrow-shot wounds, I consulted a book of surgery, written in the reign of Queen Elizabeth, by a surgeon named Clowes. A case of the sort I found, and have transferred it in full to my book on projectile weapons.* The arrow struck a serving man, one Master Withipole, in the leg, a long way, the account states, beyond the distance of the butt, six score yards. It got so firmly imbedded in the bone, that Master Withipole's life was put in peril by the efforts necessary to extract it. Another fatal consequence of arrow wounds on the field of battle was this: Men wounded thus were rarely taken prisoners. Arrows were expensive ammunition. The battle over, detachments were sent out to collect them; and the collection was not done too tenderly. To regain an arrow seemed a far more meritorious act than to save the life of an enemy. The throat of many a wounded wretch was mercilessly cut, that he might be quiet whilst the arrow was being extracted. The defects of archery were these: The ammunition was expensive, and when lost, not easily replaced. The flight of arrows is never correct on a windy day, from whatever direction the wind may blow. Rain relaxes the bow and bow-string, so that archery then is of little use.

All these are serious defects; but there was another of more importance still. When the archer's ammunition was all expended, he was nearly powerless. A

* Longmans.

Digitized by Google

sword, indeed, he carried, for close fighting; and each archer stuck into the ground before him a sharp-pointed stake as a protection against cavalry.

But archers were obliged to be mingled with pike-men. Had it been possible to combine the pike and bow in one weapon, I believe archery would have held its ground much longer than it did. In the reign of Charles I. an attempt was made to combine the use of bow and pike, or rather bow and bayonet. The combination was effected by fixing a pike to one extremity of the bow. Under the title of "The Double Armed Man," a book was written setting forth the manual exercise of this double weapon. In my book on projectiles I have given the words of command; wherein the curious may see them. This pike-bow soon went out of use. Fire-arms were improving rapidly. Nevertheless, a corps was armed, organised, and drilled to use the pike-bow. It is well to indicate that, had our forefathers not used very stiff bows, these would not have done for pike handles.

SMALL FIRE-ARMS.

I shall consider it altogether beyond the province of my present task to give anything like an antiquarian notice of small fire-arms. Cannon were employed at Crecy, as is well known, in the year 1346, subsequently to which, fire-arms became manufactured lighter and lighter, until they could at last be fired from the shoulder, and used as a substitute for the bow. Stage

Digitized by Google

by stage they were improved. The match-lock gave place to the wheel-lock; the latter to the flint-lock; this in its turn to be superseded by the percussion principle under one of its numerous forms. About 1490 rifles are said to have been first manufactured in Germany, and the manufacture was promoted in a very curious way. From the earliest date of small fire-arms to the present, fouling, or the deposition of the solid result of exploded gunpowder, gave trouble to the musqueteer. Anciently, the fouling was more considerable than now, on account of the greater impurity of gunpowder as then made. Two methods suggested themselves for obviating the ill consequences of this fouling: one consisted in diminishing the size of the ball, proportionately to the barrel, thus giving enormous windage; the other in furrowing the piece with grooves, very much after the fashion of our present rifle guns.

The fact is eminently worthy to be remembered that the prime object wherewith furrowed gun-barrels were first made, was not to import the spinning motion now known as "rifling," but to admit of contact between ball and bore at certain points, and still furnish space for the deposition of dirt. Furrowed barrels of ancient manufacture cannot be denominated rifles in the modern acceptation of the term. Rotatory motion they could not give, because the furrows were not heliacally ploughed, but straight up and down. After a time, however, the fact came to be discovered that a bullet made to assume a top-like or spinning motion,

Digitized by Google

by passing along heliacal grooves, pursued a truer flight than other bullets to which no such motion had been given. With this discovery originated the true rifle gun. Pieces of this sort were manufactured early in the sixteenth century, and thenceforth continued to be employed for sporting purposes. Until a comparatively recent period, however, smooth-bore small-arms were exclusively employed in warfare, and this for very obvious reasons.

If a rifle projectile do not fit the barrel sufficiently tight on emergence to impress itself with the pattern of the grooves, then of course the rifle principle is totally set at naught. Hence the question for us next in order to consider, is by what means this tightness can be effected.

Assuming muzzle-loaders to be alone under notice, it will be found on examination that other means of effecting this necessary degree of tightness are five; namely:

Hard Ramming.	Upsetting.
Tige Hammering.	Moulding.
Expanding.	

The explanation of all these terms will be given presently. Before doing so, however, it may be well to remark that when breech-loading rifles are in question, a very obvious means of imparting the necessary tightness consists in forming a chamber large enough to receive the ball or other projectile easily, and a barrel so much more contracted than the chamber that the

Digitized by Google

projectile, on emergence, is violently compressed, and thereby obliged to assume the rifling.

Though the question of breech-loading *versus* muzzle-loading be still under warm debate, many varieties of breech-loading rifles have been for at least two hundred years in existence. All who are conversant with the difficulty attendant upon the jamming of a bullet hard down, throughout the whole length of a rifle barrel, will easily divine the reason which thus early inaugurated breech-loaders. Some thirty years ago the usual means of charging a muzzle-loader was this: The powder having been turned in as usual, the bullet was laid upon a patch of greased cloth stretched across the muzzle. With the head of a mallet the ball was now struck until level with the muzzle, afterwards the handle of the mallet was thrust down into the barrel as far as it would go. In both hands the ramrod was next grasped, and with many a cruel blow and thwack, totally destructive of rifling, the ball was at length got down.

In my early youth I had a good deal to do with rifles, or, more properly speaking, one particular rifle. An old gentleman gave me a rifle of small bore, which he stated was a trophy from Trafalgar. It was a very curious arm, and very interesting. It was hexagonally bored, just as the Whitworth rifle is now, and which that gentleman claims as a new invention. In one respect, however, it differed from Mr. Whitworth's gun. The rifling, so far from being abrupt, was hardly discernible. It could be used with shot moderately

Digitized by Google

well, and has done me good service in partridge shooting. Guns in my father's house were contraband, he having had the misfortune to lose his left hand by the bursting of one. I was with him at the time, being about six years old. I saw the accident, but could not realise the consequences of it. All I remember is, that my father then, three miles from home, wrapped his mangled hand in a pocket-handkerchief, thrust it into the pocket of his shooting jacket, and walked deliberately home. On the way he did not speak a word, but calling at a neighbouring house, detained me prisoner, lest I should tell my mother. Presently the doctor was sent for, and the hand was off; and, putting his stump again into his coat pocket, my father went home, and broke the sad intelligence himself. Guns then were contraband in our family. I hid my rifle, as best I could, by all manner of devices. It was made to serve every turn of ball and shot gun. On leaving home to pursue my medical studies, I gave my rifle to an old servant. He in his turn gave it away as a death legacy. I do not know, therefore, what has become of it, though I should now like to reclaim it. Deer used to trespass on my father's land from the Duke of Northumberland's park, and I used to kill them. This I hold to have been fair, seeing that they could not be impounded. If it be of the slightest interest for his Grace to know, I beg to assure him that I waged war against his deer according to the strictest laws of chivalry. I never tasted a bit of their venison, nor did any of my friends. Neither did they rot, nor rest a

Digitized by Google

prey to ravens. The labourers in my neighbourhood knew more about them than I. They posted videttes, and watched my smoke wreaths; and next morning, somehow, my trophy had departed. I am told, but of my own immediate knowledge I cannot say, that such a thing as salted venison has been eaten by poor men of my neighbourhood. I am told, moreover, it is good.

RIFLE BALLS, AND RIFLE ELONGATED PROJECTILES, CALLED "PICKETS."

HOW THE ADOPTION OF THE PICKET SYSTEM WAS FIRST BROUGHT ABOUT.

The rifle system, by means of which the rotation of a projectile is accomplished, so naturally suggests the idea of a spinning top, that the wonder is, a projectile somewhat like a top in shape, had not been adopted for rifles from the very first. Nevertheless, as most persons who read these pages well know, balls—that is to say, spherical bullets—of lead were used for rifle firing up to a very recent period. Now that the picket or elongated rifle bullet has so totally supplanted the round bullet, many there are who claim to have been the inventors and introducers of it. After considering the evidence bearing upon this question, I have no doubt that pickets were used very early in the present century by more than one rifle shooter, having been adopted by each without communication. For example, Captain Norton claims to have employed pickets in 1823, and

Digitized by Google

Colonel Green of the United States—himself an admirable rifle shot, and the inventor of an excellent breech-loading rifle carbine—tells me that so long as he can remember, pickets have been used for match-shooting in the United States of America. Such individual and unconnected use of pickets, is not what concerns us so much as a study of the circumstances which led to the universal recognition of their excellence, and their all but universal military adoption.

This came about in the following manner:—When the French first conquered Algeria, their men were picked off at distances far too great for their own muskets to cope with. The Arabs had not rifles, indeed, but smooth bores, like the French, and being much longer than the French muskets, and, moreover, the Arabs being for the most part all trained marksmen, at skirmishing they were more than a match for the French.

Now up to this period it must be kept in mind that the French had wholly set their faces against the military adoption of rifled guns. In the English service, indeed, there had already for some time been organised special rifle corps. In Germany, military rifle practice was still more prevalent. In Switzerland and the Tyrol, the rifle had long been a sort of national weapon. All the testimony in favour of the rifle as a military weapon under special circumstances, did not go to prove that rifles were good weapons to supplant smooth-bore muskets for the line. So absolutely, I repeat, had the French pronounced against the military utility of the rifle, that throughout the wars of the Revolution, and

Digitized by Google

subsequently up to a period soon after the invasion of Algeria, not one special corps of French* military riflemen existed.

The great Napoleon used to say rifles were phlegmatic arms; well enough adapted, perhaps, to the stolid temperament of the Teuton or Anglo-Briton, but not congenial to the hot blood and quicker temperament of the mercurial Gaul. Frequently during the last war, as any old campaigner will corroborate, Frenchmen used to load their muskets without using the ramrod at all. To bite the cartridge, turn in the powder, insert the ball, and give the butt-end a thump on the ground, was in the heat of battle the Frenchman's notion of loading. The flash and rattle of platoon firing, conducted on this principle, was indeed considerable; but the actual amount of devastation caused by smooth bores in the hands of the French or other troops, was not great, in comparison with the ammunition expended. Whatever other military Powers might have done, or might decree to do, in the way of adopting rifles for military arms, the French had long resolved that, until some method should be devised for loading a rifle as easily as a smooth-bore musket, the rifle would never be used by them.

To counteract, as far as might be, the slaughter effected by the Algerines, several Frenchmen, about the same time, set themselves to discover the solution of this problem. The proposition was to drop the pro-

* There were foreign rifle corps in the French service.

Digitized by Google

jectile loosely into a muzzle-loading rifle, and to make it come out tight. Let the reader new to this subject —one who does not know how it has been done—pause to ask of himself how he would proceed to do it.

Probably a notion something of this sort might suggest itself to him: He might probably argue with himself thus—"If I take a beer pot, and an apple dumpling a little smaller than the pot, I might obviously drop the apple dumpling to the bottom of it. When there, I might give it a squeeze, by which it would be flattened and pressed against the sides in such a way that I might invert the pot, and the dumpling would not fall out."

Well, this is a fair exposition of the idea by which the French hoped to solve the difficulty; and, by the adoption of which, to a certain extent, they did solve it. The celebrated *carabine à tige* was the result of entertaining this notion, let me therefore describe in few words the structure of the *carabine à tige.*

Tige Hammering.—Though easy enough to flatten an apple dumpling upon the bottom of a pewter pot inside, it is not so easy to flatten a bullet of lead resting upon a charge of gunpowder. If struck by an iron ramrod with violence sufficient to effect this lateral flattening, necessarily the gunpowder charge would be first powdered into meal, and finally condensed into a sort of rocket composition. To flatten the bullet, laid naked upon a charge of gunpowder, was out of the question; but to flatten it upon a little stem-like anvil standing up centrally from amidst the powder, and

Digitized by Google

projecting beyond it, was seemingly an easy matter. Rifles of this construction were accordingly made, and on account of the anvil-stem, called in French *tige;* projecting centrally, were called *carabine à tige.*

From this description of the *carabine à tige,* the method of loading will be readily inferred.

The powder having been turned in as usual, the *projectile* (I have a motive in not saying "*ball*" or "*picket,*") is struck two or three times smartly with the ramrod. This flattens it laterally, driving it into the rifling and at the same time not damaging the powder. So fixed had the notion become that round bullets, and only round bullets, were proper to be used for rifles, that at first they were employed in connection with the *carabine à tige.* Experience soon demonstrated, however, that were it possible to substitute an elongated for a round bullet, tige hammering would be more easily accomplished. Accordingly, elongated bullets were used; and, contrary to all previous expectation, the elongated bullets shot better than the round ones.

Defects of Tige Hammering.—The *carabine à tige* was soon found to have many serious defects. The tige or stem projecting in the middle of the powder charge should be made of hard tempered steel; but I need hardly state that constant exposure to burning gunpowder soon dostroys the temper, and softens the tige. When thus softened, it bends to one or the other side, ceasing to be effective as an anvil, and seriously deforming the projectile. But perhaps the most serious defect of the tige carbine as a military weapon is the difficulty

Digitized by Google

of cleansing it, and the restricted space afforded for the lodgment of the results of gunpowder explosion. Assuredly tige rifles will never be made again. They possess a great interest as having been the means of bringing about the system of elongated projectiles—called by the Americans "pickets," and a very good designation it is.

Nevertheless, tige rifles still linger in the French army, and are, I believe, used by more than one continental Power besides. The continued use is not in deference to the merits of the weapon, but in consideration of the expense of revolutionizing the arms of an entire national force. It is not every government that can afford an expenditure so profuse and so sudden as good John Bull. This gentleman has big breeches pockets, which he freely turns out on suitable occasions. And here I must say, that the public pressure laid upon our Ordnance Select Committee, with whom new varieties of armament originate, must be embarrassing, and is calculated to be injurious. It is not an easy matter to please an inventor, whom nothing will satisfy if he be not bought up at his own price. Were one to believe the querulous complaints of certain persons whom I could mention, the Ordnance Select Committee do little else than strangle new and good military inventions by a bow-string of red tape. For my part, I do not believe it. I have experienced nothing but politeness, promptness, and facility of access on the part of that committee. I am now engaged in manufacturing a new cartridge for their inspection, with government ammunition supplied

Digitized by Google

to me from Woolwich. My cartridges are so absolutely waterproof, that they are not injured by boiling for a limited period, and may be soaked in water for any period. They are lubricated, moreover, in such manner and with such material that they can be stored in hot climates or cold without injury for periods indefinitely ong. They are less expensive, too, than ordinary cartridges. The Government lot is not yet sent in, because I have felt it right to try many experiments; because of serious illness; and because of difficulty I have had with a workman employed by me to help in mechanical details. He first began by writing for government ammunition in my name without my cognisance. The War Office communicated the fact to me. He next advertised my cartridges for sale, in defiance of my injunctions and protests. I ought to have suspected this man, after I had seen him violate the precepts of Judaism—his faith—by eating pork pies. My cartridges, I take the opportunity to say, are not in commerce at all.* No one indeed knows how to make them in all their necessary details but myself. Having lately read a paper on the principles (not the details) of these new cartridges at the British Association, it may be well to append here a condensed report of the same from a local journal.

* If ever sold, each envelope of ten will bear my autograph, for protection.

Digitized by Google

WATERPROOF AND UNALTERABLE SMALL ARM CARTRIDGES.

Chemical Section.

Dr. Scoffern (late Professor of Chemistry at the Aldersgate College of Medicine, London, author of "A Treatise on Projectile Weapons and Explosive Compounds," &c.) communicated the results of some experiments relative to the improvement of small-arm cartridges. He exhibited cartridges which he stated to be waterproof under all conditions of immersion in cold water, and which may be boiled without wetting the inclosed powder charge, or dissipating the lubricant. The manufacture of these cartridges involves—according to Dr. Scoffern's explanation—the utilization of two distinct chemical principles, viz., one for waterproofing, another for lubrication. Dr. Scoffern explained that, whilst smooth-bore muskets were used for the line, no great difficulty in loading was ever experienced: this, firstly, because bullets (spheres) of lead were used instead of elongated projectiles; secondly, because of the enormous windage, or smallness of the ball, in comparison with the bore. Contemporaneously with the general employment of unrifled small arms for the line, special rifle corps were in existence; but the latter did not use the elongated leaden pickets, now almost universal; they employed round bullets. The line of contact between a sphere and a cylinder is necessarily a circular line of infinitesimal thickness. A leaden sphere may fit a cylinder very tightly, and still be got down that cylinder without giving much trouble. When elongated projectiles are used instead of balls, then the new condition arises of a cylinder circumscribing a piston. If the piston be over-loose, it cannot be made to fit the rifle grooves; hence shooting is inaccurate. If it be a trifle too tight, the cylinder cannot be rammed home at all. Dr. Scoffern mentioned that the movement in favour of elongated projectiles began in France about the year 1828. Adverting to the necessity that the projectile of a rifle gun must fit the rifle grooves at the instant of projection, Dr. Scoffern said that the necessary fit was accomplished by one of four general methods.

Digitized by Google

By fashioning the picket with projections corresponding with the rifle grooves, as in the Jacob rifle—by dropping the picket in loosely, and expanding it laterally by ramrod blows, as in the French *Carabine a tige*—by trusting to the impact of exploding gunpowder for compressing a picket, in the direction of its axis, as in the Lancaster and Whitworth small-arm rifles—and, lastly, by effecting expansion through the agency of a cup or plug, examples of which respectively are seen in the Minie and Enfield small-arm. Whatever the method adopted, lubricants must be used. If there be no need of storing rifle cartridges, and exposing them to vicissitudes of climate, lubrication gives no difficulty. "Nothing," Dr. Scoffern said, "can be better than tallow *whilst it is tallow*;" but tallow—or indeed any oily or fatty matter—cannot long be in contact with lead without acting chemically upon the lead; the product of change being no other than the very adhesive material, *diachylon plaister*. Dr. Scoffern said that all nations that have adopted rifles for the line have experienced, more or less, the lubrication difficulty—England, however, more than any other power, for two reasons: firstly, English cartridges have to suffer greater climatic mutations than most other cartridges; secondly, the bore of our Enfield weapon is smaller than that of the small arm of most services. In India, Dr. Scoffern said, our lubrication difficulties, in regard to impediments to loading, had been very great; the full magnitude of these difficulties was, indeed, only known to a few military men. Many conjectures were once advanced to account for this difficulty. Some asserted that the bayonet grip actually contracts the muzzle of a small-arm; but a picket *i. e.*, an elongated projectile, rarely sticks until arrived somewhat near the breech. Some attributed the difficulty to inequalities in the paper with which English service rifle pickets are covered; but an officer of the engineer service of the United States having placed himself in communication with Dr. Scoffern officially disproved the latter hypothesis. The American rifle picket is *not* wrapped in paper—it is built up into the cartridge, so to speak, bedded in a mass of fat, and is extracted at the time of loading by breaking the cartridge. The American service ammunition gives no great difficulty in the colder States; but, exposed to the climatic trials of California and Texas, the American uncovered pickets are

Digitized by Google

as difficult to get down upon the powder as the covered pickets of our service were found to be in India. At present the British war authorities are so fully alive to the true source of mischief, that they have even abandoned the use of oil for lubricating the bullet-making machinery. The pickets of English service ammunition are of two dimensions: one small, for service in hot countries —the other larger, for use in cold and temperate climes. The small picket—or rather its paper envelope—is lubricated with pure wax; the larger one with a mixture of wax and tallow: a properly fitting picket cannot be used in conjunction with wax. Dr. Scoffern's process of lubrication involves the total abandonment of all oily matters: he employs hydro-carbonaceous bodies, and builds them—so to speak—into the structure of each cartridge. The waterproofing may be thus popularly explained. Some time ago a chemist of Zurich (M. Schweitzer) discovered that the blue fluid generated by the action of ammonia upon copper has the remarkable property of dissolving lignine or woody matter, and forming with it a paste. Now, chemically speaking, paper is identical with wood. If, then, a sheet of paper be passed through a cupro-ammoniacal bath, it becomes, on the instant, superficially dissolved; and, by the aid of mandrils and circular motion, may be converted into a tube. The seam of that tube is absolutely water-proof. It not only does not open if the tube be boiled in water, but it may be soaked in boiling paraffine, wax, or some one of a long series of analogous bodies. Such a tube, if closed at either end, is then air-proof as well as water-proof. Of this kind are Dr. Scoffern's cartridges. Fortunately, the lignine paste does not adhere to lead, and exerts no chemical action on iron. The envelope, therefore, spins away from the picket when discharged; and iron and steel may be used in the operation of cartridge manufacture. Specimens of the unalterable cartridges were exhibited in water, out of which being taken, and a plug removed, the contained powder was found to be quite dry. Though having no relation to cartridges, Dr. Scoffern explained that cupro-ammonium dissolves wool, silk, feathers, and hair, as readily as it does wood. The silk solution is a beautiful black japan; the wool solution is a mordant, by aid of which cotton may be made to take up wool dye. In this way Dr. Scoffern had caused a fabric of cotton to take up lac dye. The

Digitized by Google

result was scarlet, but scarlet of a poor dull hue. Whether this incomplete result be inherent and necessary, or whether dependent on his (Dr. Scoffern's) inability as a practical dyer, he is unable to decide for the present.

EXPANSION SYSTEM.—The system of tige-ramming having so thoroughly demonstrated the value of the rifle employing elongated projectiles, smooth-bore muskets were doomed.

Still the tige was undesirable. What other means of ready loading could be devised?

Captain Minie, in course of time, solved the question, by adopting a curious expedient now pretty well known. It occurred to him that at the very instant of explosion, gunpowder must impart to the projectile lying immediately over it a heavy blow. It occurred to him, moreover, that if he were to make a bullet somewhat thimble-like; that is to say, hollow at the base, and if, moreover, he were to insert an iron cup loosely into the hollow, the cup ought to be driven up, and the picket ought to expand. Well, the cup is driven up, and the picket *does* expand. Sometimes, indeed, the iron cup is driven quite through the picket, the latter remaining in the barrel. This is a great objection to the Minie system. There is yet another. The iron cup frequently blows about, and wounds men (who are not enemies) over whose heads it is fired. Moreover, the iron cup system does not answer well, except pickets and gun-bores be made larger than it is desirable to make them. Nobody now doubts that pickets of small diameter can be shot at lower trajectories, make surer aim, and

Digitized by Google

that at farther distances, than large pickets. Nobody doubts this fact. Still, for reasons by and by to be explained, limits, and these narrow limits, are imposed as to the amount of smallness of diameter of military barrels. Whether it be desirable to throw aside our Enfield arms and expend *ten millions* for guns of smaller bore, is still a moot point; one contested with more violence, than temper or good faith. At any rate, iron cups do not answer very well for projectiles of much smaller diameter than the original Minie bullet.

When our Enfield weapon was first devised, the intention was to use it, if possible, with a projectile—elongated, of course, and expanding—but having no cup. The idea was entertained that one of the present Enfield bullets, or rather a bullet like the present Enfield in general contour, but with thicker walls, might be used without cup, plug, or any addition, and still expand.

This idea was fully borne out. The Pritchett bullet was of that sort. The bullet now used by the United States regulars and militia is of that sort. Both are capable of making good shooting.

Then why abandon our Pritchett, it may be demanded? Wherefore use a compound projectile where a simple one will do? For this obvious reason: nothing that comes in the way of soldiers in actual service should be easily put out of order—should, in other words, not be too delicate. Now the Pritchett ball *is* delicate; as any leaden, hollow, thin walled projectile must needs be. Any person accustomed to handle

Digitized by Google

bullets need not be told how easily they get deformed and indented. The thinner they are, the more prone to accident. As for the American bullet, it is not so likely to get out of order as our own, inasmuch as it is built, so to speak, into the cartridge, bedded in an envelope of fat. In loading, the American bullet is used naked; being got at by breaking the cartridge across. I consider the American cartridge to be as bad as bad can be; and Americans are now pretty much of the same opinion. A mathematically-fitting picket I admit to make better shooting than a coated picket; but the difficulty is,—first to make pickets mathematically true, in the second place, to keep them so. At any rate, this much I, as a chemist, am prepared to say—the finest made picket in the world will be utterly ruined as to the purpose of fine shooting, if it be retained in contact with any greasy or fatty body at the temperature of 70 degrees Fahrenheit, for three weeks. There is no question about it; the fact is patent to anybody who chooses to observe it. Greasy bodies act on lead, and yield diachylon plaister. Instead, therefore, of stowing away bullets in grease, far better would it be to dip them in surgeon's adhesive plaister at once, for anybody who is grotesque enough to fancy this material as a lubricant. For myself, I consider it a shade worse than sealing wax.

Fully conceding the absolute merits of the Pritchett ball, I believe the reasons which led to its abandonment here are ample. The regulation Enfield wood-plugged bullet is thicker walled, not so likely to get

Digitized by Google

out of order, and therefore better. Independently of the use of wooden plugs as agents of expansion during firing, I believe they amply defray the cost of manufacture by protecting the bullets. To argue, as some argue, that the wooden plug does *not* subserve expansion, is pure unreason. Why, go to Enfield any day, and pick up bullets that have been fired with the plugs driven far up in them, or still better, fire a plugged bullet into a woolsack, and see what becomes of it. This much I admit: "a good few," as a Scotsman would say, of the plugs do *not* take effect; others take effect, but in the course of target firing afford no demonstration of it; seeing that they come out soon after leaving the gun. I believe this is owing to the pressure of air in the cavity of the bullet, acting as a spring. I believe the wooden plugs would be all the better for boring a small hole through each of them.

Upsetting Pickets.—When a bar of soft metal is compressed axially, so that its length is diminished and its breadth increased—the bar is said to be *upset*.

Now, seeing what iron cups and wooden plugs will accomplish when acted on by gunpowder, the question very naturally suggests itself, whether even elongated pickets cannot be upset by gunpowder-impact sufficiently well to promote expansion?

Unquestionably they can. But here circumstances have to be considered, which when reasoned upon naturally, point to the adoption of small-bore guns.

Thus, for instance: were an experimentalist to try his hand at shooting solid upsetting pickets from the or-

Digitized by Google

dinary Enfield piece, he would soon discover two results. He would probably discover that a lead bullet equal in diameter to the present hollow bullet, would not subserve the principle he had in view; even with heavy charges of powder. He would, secondly, discover such a black mark on his shoulder, and such a shaking of the ribs, as would damp his energies and cool his love of investigation. Supposing him to be an obstinate, an unthoughtful, or a fool-hardy man—and there are such—he would probably go on increasing the length of his picket, and the weight of his powder charge. Then he would discover something else; but what, one does not know exactly. Should the gun fail to burst, he would receive such a terrible recoil, as to convince him that firing the upsetting pickets from a big-bore gun is impracticable. Most probably, however, the piece would blow up; and the operator, on looking about, would discover his head on the greensward.

So it comes to this—if upsetting pickets are to be used at all, they must be fired from small-bore guns; like those of Mr. Lancaster, or Mr. Whitworth, for example. Under these conditions, they answer admirably. No rifle amateur, desirous of firing accurately at long and untried distances, will ever use any other.

Why, then, not use small-bores and upsetting pickets in ordinary military service? Why, simply because other considerations have to be kept in view, besides those of far, and extremely accurate, shooting. Rapidity of fouling is a much more important matter for the military man to take heed of. "Fouling is obviated by lubrication,"

Digitized by Google

some small bores (I know many), din in my ears. I tell the small bores that at least one variety of fouling is not; I mean the fouling behind the bullet. The small bores must be given to understand, that each charge of gunpowder fired, leaves a fixed deposit. I tell the small bores that such fixed deposit is a constant quantity. I tell them that to look forward, as they look forward, to the time when a purer gunpowder shall yield a less deposit, is visionary. I tell them a certain amount of non-volatile deposit is inherent to the very nature of gunpowder. I tell them that sulphur, charcoal, and nitre, however pure, can no more explode wholly into gas, than the diamond can burn to ashes.

Well, then, it comes to this: a deposit there must be; and that a fixed quantity for a fixed charge. The gun-barrel—the cylinder—must retain that quantity; and the "small bore" may as well try to convince me, that cylinders of equal length, but different diameters, have both the same capacity—as that a quart of wine can be got into a pint bottle.

It is well that the small-bore should know that with present service ammunition, the normal amount of deposit left in an Enfield rifle after 1,000 rounds is one inch. I have no time to work sums. The small bores know their Cocker. Let them work it out, and tell me how many inches of deposit would be found in a small bore of such diameter as they clamour for as a military weapon?

There is another objection to small-bore rifles for military use. It seems a small objection, but truly it is

Digitized by Google

a great one. The ammunition, what with elongated picket and heavier charge, must be made up into cartridges so long, that they become awkward, and treacherous. They are more like pencil-cases than cartridges. They easily break, and the pickets readily bend.

THE MOULDING PRINCIPLE. — Long before any system of elongated bullets had come into use, a method of ready-loading for muzzle-loading rifles had been devised in Germany. I believe the system to which I am about to refer originated in Brunswick; at any rate the "Brunswick rifle" is always associated with the idea of a two-grooved rifle, charged with a belted ball.

I do not know in what precise year the Brunswick rifle with belted ball was introduced into the special rifle corps of our own military service; but I know that this occurred at some period subsequent to the adoption of expanding pickets by the French. Not much can be said in favour of the Brunswick rifle charged with belted ball; but when reduced in bore, and when employed to shoot an elongated projectile, it answers very well indeed. Some of our favourite sporting rifles are made on this very principle.

It is hardly worth while to treat of the defects of the two-grooved military rifle, and its belted ammunition, seeing that it has gone out of use—supplanted by the Enfield. My object in adverting to it here was not so much to describe the gun and ammunition, for their own sakes, as to illustrate by example the moulding system or principle. Now the two-grooved rifle and its belted ball offered a very good illustration of this—one,

Digitized by Google

moreover, which comes in proper historical order ; for though the moulding system has been applied to many guns since—Jacob's celebrated arm, for example—the Brunswick rifle with belted ball affords, historically regarded, the first illustration of it.

Now the peculiarity of the two-grooved rifle is that the grooves are so deep, that by no possibility could a ball large enough to fill them, be got down by ramming. The only way of filling these grooves is by casting, or moulding the ball, with projections corresponding to these grooves.

I may here remark that a deep two-grooved rifle could never, and can never, embrace either the expansion or the upsetting system. It suits the moulding system, and nothing else. To this fact I wish to draw particular attention; inasmuch as a truly great, and good, and energetic man—one to whom this country owes very much, and for whom she did very little—the late General Jacob, of Jacobabad—calls Lancaster's oval-bore rifle a two-grooved rifle in disguise. Alas! poor General Jacob could not be pained by any difference of opinion expressed by me: even were I of sufficient importance to challenge his observation. He is dead. Peace be with him!

Now Lancaster's oval-bore system, if it really is a two-groove rifle in disguise, is one very much disguised indeed. Whereas the two-grooved rifle lends itself least well of all to the expansion and upsetting principles—Lancaster's oval-bore embraces no other.

Now I state from my own knowledge that both

Digitized by Google

Captain Ross and Mr. Ross, the winner of the Queen's prize, consider Lancaster's oval-bore system the very best extant, all things considered. With my own ears I heard Captain Ross speak as follows the other day:—"It is impossible," said he, "to excel Purday's sporting rifle for sporting distances—and it is sighted to no other; but Lancaster's sporting rifle shoots equally well, and is charged with greater facility. As for Lancaster's military small-bore rifle, it beats every other which has come under my notice. The accuracy of Whitworth's is very great when the bullet does not strip, but the accuracy of Lancaster's is equal to it; and so far as I can discover by practice, the Whitworth bullet strips or fails to take the rifling more frequently than the Lancaster."

This with my own ears I heard Captain Ross say; and though I did not hear what follows, I know that some such conversation as this took place on Tuesday, July 3rd. It is almost verbatim; I repeat it as related to me, by one who *would not have misled me.*

Mr. Whitworth, addressing Captain Ross—"You have been stating something about my guns in the papers, Captain Ross."

Ross—"Mr. Whitworth, I have stated nothing about your guns in the papers. I know there have been newspaper paragraphs about some shooting of mine; but I am not answerable for them."

Whit.—"They say you prefer Lancaster's gun to mine."

Ross—"It is impossible, Mr. Whitworth, to deny

Digitized by Google

that your gun shoots very well; but Lancaster's gun shoots equally well, and its bullet hardly ever strips. Yours more frequently. I certainly prefer Lancaster's."

Something more I know in reference to this matter, and from my own knowledge.

On Friday night I was sitting with Captain Ross and his son. The latter seemed very pensive, and I joked him about it.

"What lies so heavily on your mind," said I. "Has Aunt Sally withheld her favours?" "I am vexed," said he; "very much vexed. Having won a Whitworth rifle, qualifying me to go in for the Queen's prize, I ought to have been allowed to use one of the length to which I have been accustomed, at least; if not (which I should have preferred) a Lancaster. But here I am—never having shot with a short Whitworth in my life—compelled to shoot with one to-morrow; only for the reason that I won that gun in competition."

All this was eminently unfair, and should be known. That Mr. Ross carried away the Queen's prize under these unfavourable conditions, is the more to his credit. I impute nothing; but of this I heard a whisper on the field; namely, that if Mr. Ross had failed to win the Queen's prize, Mr. Whitworth would have been all the better pleased:—*seeing how undesirable and impolitic it would be—viewing circumstances from Mr. Whitworth's point of view—that the winner of the Queen's prize should be said to have expressed his preference for the Lancaster.*

Digitized by Google

Had the issue of Mr. Ross's contest with the—to him—strange and unaccustomed short Whitworth, been unfavourable, of course, what I have just said must have remained unsaid. It would have looked like disappointment, jealousy, envy, hatred, malice, and all uncharitableness. Be it so: it is well.

From discussing the moulding principle of rifle-loading, I have diverged; though not unnaturally, or I hope unprofitably. The principle having been illustrated by the Brunswick rifle, I may now indicate that the Jacob rifle also adopts moulded pickets, and apparently for the following reason.

As will be fully evident on consideration, the Jacob rifle being intended for the effective discharge of explosive shells, must have a good diameter, in order to find the necessary shell capacity; and the operator must not have to get down his shells by hard ramming; other wise they would explode in the gun.

REVIEW AND SUMMARY.

Having now cursorily, but I hope with sufficient practical fulness, indicated the various principles by which the rifling of small arm projectiles is brought about, it may be as well to draw the ideas evolved into one common focus.

The following conclusions are arrived at:—

(1.) Assuming, for argument's sake, breech-loading to be preferable, the projectile, if only it be of sufficient diameter, must needs assume the rifling.

(2.) Whether a naked uncoated projectile be con-

Digitized by Google

ceded better or worse, breech-loaders must, almost of necessity, fire naked projectiles.

(3.) Muzzle-loaders being in question, the most obvious way of charging them is by hard ramming: but the system is obsolete.

(4.) The cup, or plug expansion system, is only adapted to the case of large bores.

(5.) The upsetting system is only adapted to the condition of small bores.

Corollary.—To give full effect to either expansion or upsetting, the lead should be very soft—in other words, very pure. Lead which has been fired at an iron target and picked up, contains iron, and is ineligible. Were I a Volunteer going in for sharpshooting, I would buy pure lead of the chemists. It is used in gold and silver assaying; is very soft, and very dear. But for special purposes, expense is a trifle.

Memorandum.—Present a rifleman, of whose prowess you are jealous, with a hardened bullet. If his rifle be intended to take advantage either of the expansive or the upsetting principle, your enemy's shooting will be probably bad, and he will probably lose. *Some bullets, suspected to have been hardened with antimony or tin, were given to a gentleman on the field, who conveyed*

Digitized by Google

them to me for analysis. He did not shoot with them, but with others to which he had been accustomed. He herein followed the safe advice, of "Hold to what you have proved."

The analysis, though a simple matter, I have not found the necessary time to execute yet. Lead is absolutely and entirely soluble in nitric acid; antimony and tin crumble under the action of the same acid, to the condition of a white insoluble powder. With antimony or tin, lead is usually hardened: so the mode of analysis is obvious.

(6.) The moulding system is almost indispensable to him who would adopt the use of percussion rifle shells, fired from muzzle-loaders.

(7.) By taking advantage of the moulding system, hardened projectiles may be used, provided the rifle have not a gaining twist. For example, Mr. Whitworth has even shot steel bullets from his hexagonally-bored rifle; as well as bullets of hardened lead. The great penetration, so much boasted of as a speciality of his rifle, depends on the use of these moulded bullets; a fact which ought to have been stated openly, instead of being thrust without explanation into newspaper reports. These hexagonally-moulded bullets, however, do not shoot accurately; a fact which should also be made known.

(6.) Moulded bullets of elongated form cannot be

Digitized by Google

made up into ordinary service cartridges; a very fatal objection to their military employment, even were there no others.

ON THE SHAPE AND CONSTRUCTION OF BULLETS.

Conceding, as one well may, that no sensible person will ever use a round rifle bullet again, except for rook shooting, or at other short distances; conceding that elongated bullets are infinitely superior, it still remains to be determined what amount of elongation is best, and what general contour of bullet.

Now on these points there is much difference of opinion. There is not less discussion as to the best lines for rifle bullets than in regard to the best lines for the contour of ships. Certain general deductions have nevertheless been eliminated.

Firstly, there can be no doubt that a certain length of cylindrical contour is necessary to accurate flight. A bullet longer at the base than at the shoulder is bad. It causes ricochets. This defect, I am sorry to say, is inherent to the present regulation Enfield bullet of govenment make.

It may be that bullets having shoulders slightly larger than their bases, are even better than bullets of mathematically even cylindrical gauge. The best shooting I have seen made with government Enfield bullets of gauge ·55, has been accomplished by giving them four full turns of regulation paper at the shoulder, and three at the base. The paper must,

Digitized by Google

however, be laid on in a peculiar manner, which I cannot now explain. Three full turns of regulation paper answer very well; but for general military purposes, it may be that two are better. I object to any half turns, as in government cartridges, because of the loss of concentricity involved. With my own hands I have made four thousand cartridges; therefore I do not pronounce on this subject as a mere theorist. As to lubricants, nothing can be better than tallow, whilst it is tallow; but rifle balls cannot be safely lubricated with tallow if they are to be a long time stored. On this point see pages 34, 35, 40. If rifle bullets be lubricated with a mixture of one part naphthaline, and three of pure wax, the shooter will have nothing to complain of. I have patented this composition, amongst others better but more difficult to use, for self-protection; any gentleman, however, is permitted to employ it for his own use; and I in response rely on gentlemen, to inform me if they should discover any surreptitious infringement of my patent by persons in commerce. The presence of naphthaline may readily be discovered by the smell. Whatever the lubricant, slit quite through the bullet envelope longitudinally before loading. This promotes the immediate rupture and disengagement of the envelope. Patches of cloth are not to be recommended. They do not readily disengage. As regards regulation cartridge paper, it may be bought of Mr. Townsend Hamblin, Oxford Street, —and I believe nowhere else, at present. He uses it for envelopes; because of its extreme toughness.

Digitized by Google

MUZZLE-LOADERS AND BREECH-LOADERS.

Of the two I believe muzzle-loaders are, and must necessarily be, more accurate than breech-loaders.

On a recent occasion I was present when Colonel Green, U.S., the inventor of more than one excellent breech-loader—himself an excellent shot—was making practice. He shot alternately with a muzzle-loader and a breech-loader—the latter not always of the same make. Invariably the muzzle-loader gave the best results.

"How is this?" said I; "you shoot better with muzzle-loaders than with breech-loaders; whether your own, or of others!"

His answer was expressive. "I never yet did see—and I never expect to see, a breech-loader make quite so good practice," said Colonel Green.

"And why?"

Because a breech-loader must necessarily fire over all the dirt of the previous discharge. Now, on consideration, this is obvious. Much or little foulness there must be; for there is no wiping it down in loading. I must here, too, remark, that all the breech-loaders used on that occasion adopted the principle of taking up the recoil on a greased wad, and thrusting that wad forwards in front of the next bullet.

Nevertheless, breech-loaders shoot accurately enough for all military uses. The great objections to them one and all, are the difficulty of keeping their breeching gear gas-tight, if ordinary cartridges are used; and in

Digitized by Google

the case of some necessity of cartridges of special make; those with a copper base, for example.

Whether a breech-loader, of any construction, be better adapted for infantry than a muzzle-loader, is a matter relative to which I ought not to express an opinion; not being a military man. The only breech-loader which has hitherto found adoption for the line is the Prussian needle-gun. I have seen much practice with it in Prussia; and can say, from my own knowledge, that it rapidly gets out of order; and is, on the whole, unsatisfactory. Besides, it is a frightfully dangerous weapon. The slightest prick of the needle explodes the cartridge; such, for example, as may happen from letting down the hammer, previously to the act of drawing it back to half-cock. I once nearly lost my life in this way from a needle-gun. The full details of the case are given in my book on projectiles.

For military purposes the needle-gun ammunition is open to the objection that it carries its own detonating materials in each individual cartridge. If a rifle bullet be fired into a case of this ammunition it all explodes. Varieties of the needle-gun are now commonly used for rook shooting; not the Prussian pattern, however; which is very different.

During the Schleswig-Holstein campaign, the needle-guns of the Prussian troops engaged leaked fire so much that they were ultimately obliged to be shot from under the arm.

Whatever doubt may remain as to the desirableness of employing breech-loaders for the line, none

Digitized by Google

whatever can exist as to their convenience and efficiency for cavalry. To charge a muzzle-loader on horseback, and in motion, is so obviously difficult, that a good breech-loader is really a desideratum. Now, as I have stated already, the breech-loading difficulty is settled, once and for always, if we choose to go to the expense of special ammunition; and choose to subject ourselves to the danger of it.

The French have done this. Heavy cavalry may be said to have been done away with in France. Horsemen are now taught to baffle the aim of trained rifles by constantly moving about; loading and firing, Arab fashion, in motion. I hate having the task imposed upon me of describing any machinery more elaborate than a nut-cracker or a mouse-trap. I shall not minutely describe the French breech-loading carbine. Its cartridge is a copper-based cartridge, having a patch of fulminating composition inside; exactly, in point of fact, like Lancaster's breech-loading shot cartridges. It is exploded by indentation, not puncture; and the hammer acts upon it direct. Unlike the barrels of breech-loading sporting guns, that of the French carbine does not tilt up to be loaded; but turns half round on one side.

Now, I will relate an anecdote about this carbine, which is extremely simple, and seemingly not prone to get out of order; a very usual allegation against all breech-loading guns. A friend of mine got one over, and, at my solicitation, took it one evening for the purpose of showing it to the editor of a morning paper. Well, it

Digitized by Google

was in careful hands—a gentleman accustomed to guns. It was handled not roughly; it appeared reliable. Yet get out of order it did; and had the scene been a field of battle instead of an editor's room, the breech-loader could have been fired no more for the day. Briefly, I may here state, that I never yet saw a breech-loading military arm that did *not* get out of order after such a moderate amount of rough usage as would have damaged no muzzle-loader; and which must, seemingly, be anticipated in practice. Some time ago, I was requested, on the part of the management of a morning paper, to inspect and report on the merits of a breech-loader of novel construction. I went. The inventor wanted me to see the practice of a few rounds. I declined. "Fire three hundred rounds," I said; "put the gun aside without cleaning, and let me see it tried on the following day." Well, he did not seem to like it; and, not overtly declining, still did not do it. The very proposal to subject a breech-loader to this ordeal is enough to make breech-loading inventors stare, and go away. As to the breech-loading contest at Wimbledon, it was a farce.* It merits no better name. It was useless;—powder burnt to waste; time thrown away.

As regards breech-loading pistols, the problem is solved; and of all breech-loading systems the revolving system is best.

If any person should reason thus with himself: "Inasmuch as revolver pistols answer—*Ergo*, revolver-

* By this, I do not mean to disparage the merits of shooting accomplished by breech-loaders. *It was excellent.*

Digitized by Google

loading carbines and full-length guns must answer," I say he errs. Up to a certain diameter, revolver-loading carbines may succeed; their charges are not high, and they are held with one hand.

Fire a revolving pistol by night; observe the escape of lateral flame like the halo around the head of a saint. How would you like your arm to be in that burning halo of flame?

Colt tells you his carbines *need not* be held with two hands. I tell you they *cannot* be held with two hands; the coat-sleeve would be burned through presently. And see how manufacturers of revolver long arms steer clear of big, or moderately big bores; a condition which would speedily try out conclusions. They stick to thick barrels, and small bores, and low charges. I tell you, revolving full-length fire-arms are a failure.

THE INDIVIDUAL MERITS OF CERTAIN MUZZLE-LOADERS.

I hope it will not be inferred from any remarks just offered relative to breech-loading guns, that I wish to damage the ardour of any inventor. I myself know what the travails of inventors are, and can understand the feelings of others.

My remarks on breech-loaders are purely in reference to breech-loaders considered as small arms for the line; not as employed as wall pieces, or for other special purposes. Though I have laid, to the especial disparagement of breech-loaders, that they are prone to get out

Digitized by Google

of order, yet I never yet saw a breech-loader that I personally could not have placed confidence in; and which, in my hands, or the hands of any other chemist, need get out of order. Now, how is this? Thus simply. A chemist is accustomed to handle delicate instruments; miscroscopes, balances, air-pumps, and so forth. He knows the importance of keeping his apparatus scrupulously clean. He has the opportunities of carrying out his wishes in this respect. Can an ordinary soldier be expected to feel the full importance of these matters? will he, in the hurry and turmoil and privation of campaigning, be able to act as a chemist?

Impressed myself with the conviction that the time has not yet come for adopting breech-loaders for the rank and file, I may be excused for saying no more in respect of them.

Muzzle-loaders I am convinced are the weapons to the consideration of which our chief attention should be given. If good and in good order, I believe they can be charged in all positions without inconvenience; and I believe their firing can be conducted with rapidity enough to subserve all ordinary military purposes. Of course, every rifleman knows that rifles, since their introduction to rank and file, have given some trouble; or, more properly speaking, rifle ammunition; but the cause of this trouble being known, it need not re-occur. One plea in favour of the use of breech-loaders is this:—Their advocates say there is not, and never can be, any difficulty from fouling. I differ from them. True, the bullet of a breech-loader *must* come out when the charge behind it

Digitized by Google

is fired; but coming out is a different matter from going truly. A foul barrel will ruin a bullet's flight; whether that barrel be of a muzzle-loader or a breech-loader.

WHITWORTH GUN.

A somewhat objectionable practice has been followed by the public for some time past, in reference to the description of various small arms. Either, instead of principles, they talk of people—saying, "Whitworth's gun," "Lancaster's gun," or they associate principles with people unnecessarily.

I have written elsewhere, and I now write it once more, that Mr. Whitworth may consider himself a very fortunate man. He began his labours totally ignorant of guns and their belongings; he concluded them by discovering, what gunmakers had known a long time ago; namely, that, in order to accomplish a maximum range, with a trajectory of minimum height, the smallest possible bore must be used, consistent with other requisitions, and the smallest and longest possible bullet, under similar limitations. For this discovery, he has received from government somewhere about twenty-two thousand pounds already; and I think it will be found that the government have authorized him to disburse thirty-four thousand pounds more; thus making a total of fifty-six thousand pounds in all.

Yes! Mr. Whitworth may consider himself a fortunate man. Some years ago he had the good fortune to erect, for the *Times* newspaper proprietary, a print-

Digitized by Google

ing machine. A long-range printing machine, one may call it; that machine was to do extraordinary things.

And that machine *has* done extraordinary things. I put it to the conscience of anybody, who reads the columns of the Jupiter's Gazette, whether that long-range printing machine of Mr. Whitworth could have done more in his behalf had it been a thinking, reasoning, sentient thing, instead of a mere ingenious combination of brass and iron?

Perhaps the most extraordinary feat accomplished by the long-range machine was to publish the discovery, made somewhere down in Printing House Square, that long-range of a projectile and accurate flight of a projectile were one and the same thing. Yet this *was* published editorially in the *Times*. Why, old Brown Bess would throw her bullet a mile, and could not be depended upon for truth at 100 yards.

I wish fair play to every inventor, and no favour. This is what I wish; and so far as lies in the power of my small ability, Mr. Whitworth shall have the fair play and no favour that I crave for him. He is an admirable mechanician—a successful man. He never did me an injury—he never crossed my path. I never had the honour to speak to him. I do not know him. Why, then, have I spoken of him, as I do now, with some asperity?

Simply as a duty. The subject of projectiles is not very generally studied. A gentleman in Mr. Whitworth's position of wealth and reputation, with a power-

Digitized by Google

ful newspaper in his interest—that paper setting forth his claims with all the graces of an elegant style, and all the wonted arrogance of a journal which has grown so powerful, that its very ignorance passes for truth; its tergiversation for consistency; its reckless daring for prescient wisdom; its arrogance for inbred superiority—a gentleman in Mr. Whitworth's position, and having his appurtenances, becomes a dangerous man. Dangerous, I say, from his very celebrity and well-earned fame. The public must have a hero. They wanted a gunnery hero. They talked of Whitworth's principle; and choose Mr. Whitworth; and would have saddled the country with additional taxation to the amount of *ten millions*, for the purpose of substituting the Whitworth for the Enfield gun.

Thank God! men of science, so far as I have studied them, have what I may call two individualities. They move, and think, and act in the ordinary world like other men; often no better, in any moral sense;—frequently worse.

But an intellectual world they live in too. It is their own. It is their pride to deck it out in beauty, and keep it pure. It is a sort of heaven, and only those who have been approved, can get there.

Now, I observed in Mr. Whitworth a tendency to take the double stand of a man of ingenuity, sacrificing to fame; and a man of science. To the first he is welcome: to the second, I demur.

We hear of Mr. Whitworth's "*principle.*" What is it? I take a Whitworth small-arm; I find it to be

Digitized by Google

hexagonally bored, if made some time ago; I find it a modified hexagon, known among gunmakers as *diamond rifling*, if manufactured recently.

Is the hexagonal bore a new principle? Why, when a youth, I possessed a foreign-made rifle, hexagonally bored, myself. Is the diamond cut rifling a novelty? Gunmakers will tell you.

But Mr. Whitworth's small-arms have a small bore. Assuredly. And their rifling is very abrupt. Conceded.

But rifles of every sort and condition of bore were known before the time of Mr. Whitworth. The fact was well known that small-bore guns, and these only, can accomplish long ranges: and, as for abruptness of rifling, all varieties and conditions of abruptness had been given by way of experiment.

I am at a loss to know what single new principle Mr. Whitworth has introduced, in the manufacture of his small-arm. I am prepared to say that hexagonal boring does not conduce to range; inasmuch as an experimental small-arm of Whitworth gauge, but Enfield rifling, has given a lower trajectory and a better range. This fact was made out at Enfield. A committee was appointed to see and report. I have seen the report of that committee. I published the tenor of that report in a morning paper, anonymously; and I pledge myself to the truthfulness of it. If what I state be not true, let Mr. Whitworth, or the barrister, his coryphæus, and, as I hear, his partner, contradict me.

Well, then, the position of Mr. Whitworth, as inventor of "*a system*," not being conceded; looking on

Digitized by Google

him only as a good mechanician, using good material, and good workmanship; the question remains, whether a hexagonally bored small-bore gun, is better than an equally small-bore gun, of different rifling?

Well, on this point, if two guns, otherwise equal in correctness, be taken; the one which strips its bullet least frequently, is best. This being so, the reader has only to consult page 46.

I say nothing to the functional disparagement of Mr. Whitworth's gun; because of its so frequently missing fire at Wimbledon at the recent contest: more especially up to Thursday. I was told, that communication between chamber and nipple was too small; and that so conscious was Mr. Whitworth of the existence of this defect, that his small arms were to be sent to Woolwich for alteration and amendment, before the morning. It is only due to Mr. Whitworth to state, that though his guns were bitterly anathematized, the censors were just. They told me that Mr. Whitworth had flooded the field—so to speak—with his rifles; that, turned out against time, they had neither been sighted accurately, nor their detonation properly seen to. Hence the complaints of frequent misfires; and, what is more extraordinary for Whitworth's guns, wild firing; for none but an ignoramus, or a blind man, can deny the usual accuracy of this weapon, when it does impart the rifling.*

As to the present system of loading the Whitworth gun, it is a fatal mistake. Mr. Whitworth will find this

* On this point, see page 46.

Digitized by Google

out in time. Lubrication of a rifle bullet is all very well; ay, indispensable. But it does not follow that because adequate lubrication is good, a lump of grease, or wax and grease, not smaller than a horse bean, should be thrust down naked, between powder and ball. In a cold gun this can do no harm; but, how about a hot gun? Will not the lubricant melt? and when melted, where will it go? If a mixture of powder and grease inflames as well, evolves its gas as well, if it be in all respects as efficient as pure dry gunpowder, well and good: but I have yet to learn this is so.

LANCASTER'S GUN.

Poor Brigadier Jacob used to say that Lancaster's oval-bore gun was a two-groove rifle in disguise. Well how much of correctness is in this dictum we have discussed already at page . It would be somewhat late now, to eulogise the oval-bore system for small arms, now that the merits have been so fully admitted by military men, and now that the winner of the Queen's prize has stated his preference for it. As to the mode of rifling a gun, one method is as good as another provided it give the bullet a sufficient rapidity of turn: as good in all respects save in the difference of fouling. Now, in respect of this, it stands to reason that a gun without grooves at all, must afford less lodgment for fouling than a gun *with* grooves. Moreover, Lancaster's gun, using, as it does, a cylindrical bullet dropped into a barrel of eccentric bore, the bullet only touches the barrel in dropping down by two infinitesimally thin

Digitized by Google

lines of contact. In the course of my experience with lubricants, I have tried some very abominably bad ones; but I never yet met with a lubricant, however bad, that impeded in serious degree the loading of a Lancaster small-arm.

THE SWISS GUNS.

Rifles of Swiss pattern are all after one model: very heavy guns of small bore, with crooked stocks, and fine light bullets, each with two deep cannelures.

All the Swiss rifle matches are conducted at ranges of about 180 yards. Their guns are not competent to make even tolerable shots at more than 300 yards. Land is so valuable in Switzerland, and is so much divided into different proprietorships, that there is a difficulty in finding long ranges. Nevertheless, those fine fellows vow these long ranges they *will* have, that they will practise at long ranges, and will keep coming here till they beat us. Bravo Switzers! We shall be glad to see you.*

As regards the Swiss system of loading and firing, both are peculiar. The Switzer unslings a powder flask of large dimensions, and turns in a charge of about two and a quarter drachms of powder. From a side pocket he next extracts a linen patch, and putting it into his mouth, he turns it round and round, very

* The Swiss have not beaten us, even at their own range, as some newspapers have erroneously announced. Aunt Sally would tell you as much, could she speak. Mr. Ross made three bull's-eyes following at a short range, and destroyed Aunt Sally's custom.

Digitized by Google

much as Jack turns round and round, his quid. The Switzer's object is to saturate his patch with saliva. This is his way of solving the lubrication difficulty; and mind me, it is not a bad one. His next move is to lay the patch flat upon the bore, and the picket upon that; which being done, he takes the ramrod in both hands, and drives the picket home with one thrust. To be assured that it is home, the Switzer jerks the ramrod down upon it with a ringing thwack. "Bad practice," you say: "he meals the powder;" not a bit of it. At the end of the ramrod there is a flat iron boss, which only permits it to fall down to a fixed and unvarying extent.

Well, the anxious moments of firing are now come round. See how the Switzer employs them. He begins by planting his legs wide apart; left leg foremost. He tries the ground under him for a moment or so, to find whether it be soft; and if he can wriggle out two little graves, one for each foot,—the better.

Should you have turned away your eye for a moment, and then direct your glance at the Switzer again, you will have found him half as big again as he was when you last saw him. He has puffed himself out with a deep breathing, like the frog who aspired to become a bull.

By this deep inspiration, the Switzer has stiffened himself, just after the way one takes the limpness out of a Mackintosh cushion—by filling it full of wind.

The Switzer is firm planted and rigid now; he could no more bend from side to side than can a hard rammed sauage. If he were obliged to hold his wind as long

Digitized by Google

as we take to tell our tale, it would be bad for him. He would burst outright, like an overcharged rifle.

Well! with legs apart—like a little Rhodian colossus, and bated breath—the Switzer shoulders his piece. At the end of the stock is a boss, which he tucks between the right arm and right ribs. Gathering his two hands close together, he rests his rifle on the left hand, placed close in front of the trigger guard; pressing his left elbow—not on the left knee, indeed—but upon the left hip. Lot's wife could hardly be more rigid. Limited power of motion, nevertheless, the Switzer has. Heavenward you see his rifle pointing:—and if you observe the Switzer's nose—that organ, only given for ornament, as some affirm—it is turned to a purpose of utility. The Switzer is steadying the butt-end of his rifle against it. His nose is a lateral rest. By this time that nose is red on the tip; the face turgid, the eyes projecting. The Switzer's whole position is decidedly not graceful—one very suggestive of extrusion. Heavenward you see the rifle pointing. Gradually down and down it droops. The blank is seen, the trigger pressed. Rifle crack, and Switzer's grunt, follow on the heels of each other. He could not hold his breath for ever. Picket and imprisoned breath both fly off together. Behold him now panting and puffing like a Cinghalese pearl diver, fresh from the worrying of a ground shark.

Decidedly, our style of rifle firing is more graceful and more quick. Moreover, it is the only style compatible with the size of somewhat light rifles, as military rifles must ever be.

Digitized by Google

THE TRIGGER PULL.

I am sure it is quite unnecessary for me, in these volunteering times, to waste words and time, and ink of two sorts, by expatiating on the A B C of rifle holding and rifle triggers.

You are taught, at first, to hold the rifle almost entirely with the left hand; squaring out the right elbow, and tucking the left underneath, after the manner of a bracket. You are taught not to grasp the grip of the stock with the right hand; only to steady it with the same—to squeeze the trigger, *not* pull it, with the second joint of the right forefinger. Well, all this is founded on good anatomy and good physiology in the main; and to the test of good anatomy and good physiology the thing must come at last.

Approving of the Hythe positions, I am nevertheless bound to admit that some of the best shots I know, or have ever seen, violate them more or less.

As to the trigger pull, most of the military Enfields require a pressure of seven or eight pounds. Were I using an Enfield, I would have the pull altered to three pounds. An eight pound pull may be all very well for a ploughman, but it ill accords with the fingers of a sedentary man.

GUNPOWDER.

There cannot be a greater mistake than to put down coarse-grained powder, and bad powder, for one and the same thing. The philosophy of explosive

Digitized by Google

combustion is much too long a matter for discussion here. I have treated of it in my book on projectiles, to which readers may refer. In this place, I must content myself with the observation that the longer the rifle the coarser grained the powder should be; and if for all lengths of rifle one powder be served out, it should be coarse grained powder.

Stating this, brings to my mind, a little event which occurred on Saturday. Everybody couldn't be first shot at Wimbledon. This to me is clear; but I met with one volunteer at least who didn't seem to think so. Seeing a gentleman whom I know by sight, a member of a suburban corps of volunteers, I asked him into a private room of the hospitable Rose and Crown, where I was taking a comfortable cup of orange pekoe. I happened to show him a cartridge not yet in use: and seeing it, he called in two comrades.

The two latter I had not the honour to know. One of them affected to be very learned in discriminating the goodness of gunpowder. He proclaimed my number six, "Curtis and Harvey," to be good-for-nothing; vaunting the superiority of fine grain. I was ill-tempered at the time, and waxed warm. I said perhaps more than enough; but no harm came of it. You are told to forgive your enemies, but, so far as I can understand, you are nowhere told to forgive them until they apologise. Well, our little *brusquerie* was soon over, and we became the best friends imaginable; in proof of which, I deluged my fine orange pekoe just ingested with—oh! at what a sacrifice—a glass of pale ale.

Digitized by Google

"Well, sir, now our dispute is at an end," said I, "suppose we take the opinion of Captain Ross and his son about this powder; they are in this house."

"Agreed."

Mr. Ross came in.*

"This gentleman does not approve of my powder," said I.

"Well," responded the Queen's prize winner, "all I know is, that I shoot with it."

He left the room, inviting me upstairs, where I soon joined him, as will be seen.

No sooner was he gone out of our presence, than the gentleman with whom I had differed as to the qualities of gunpowder—I do not know his name, but I think he is a non-commissioned officer in the Ilford Rifle Volunteer corps—gave me to understand, what I did not know before, and am not quite satisfied about now, that *he*, not Mr. Edward Ross (had justice been done) should have come away laurel-wreathed.

"I will fire with Mr. Ross for what he likes," said the brave volunteer.

"I should think that gentleman has had firing enough for the present," quoth I, and went upstairs.

At once I conveyed the challenge, by way of joke.

"I object to boasting," said Mr. Ross; "but I am ready to oblige that gentleman."

"Conditions of firing?"

"Whatever conditions the gentleman likes."

* Son of Captain Ross, and winner of the Queen's prize.

Digitized by Google

"Stakes?"

"Well, now—I am not going to fire for any paltry stake, you see."

"You shall not fire for any stake under £500," quoth Captain Ross.

"Perhaps £500 might not be a convenient sum to the gentleman," quoth I.

"Ah, well then, to obliged him, let us say £200," interposed the victor.

"Shall I make the match?"

"Oh, by all means."

And I tried to do so. Tumbling downstairs, I sought the hero, but he had flown. Hatless, I ran after him, but could not find him. He will see this; and it is serious. Let him deposit his stakes of £500; or, if he prefers it, £200, with his captain, Mr. Davis; and I, on the part of Mr. Ross, assure him that the corresponding sum shall be forthcoming.

Certainly, this to me is a matter of extreme fun. I like to reward heroes as I like to put down humbugs; and I shall assume the Ilford volunteer to be a hero until he withdraws his challenge.

I am willing to arrange this little matter; but if preferred, the Ilford hero may treat direct. The address of Captain Ross and his son is Carlton Club, W.

Having hereby expressed my opinion that the Ilford volunteer is a hero, not a humbug, I may now as well state that there were also humbugs on the field; I saw many of the genus in all its subdivisions. Of this more hereafter. I am now on gunpowder.

Digitized by Google

Yes, depend upon it, coarse-grain gunpowder is the best for rifle shooting, and Curtis and Harvey's No. 6 is as good as any, if not better than any. Rifle competitors—a word more in your ears. Weigh out your charges, and don't measure them. You cannot measure accurately to five grains, more or less, with *every* care. Weigh it, I say; and not in a clumsy pair of apothecaries, scales. Buy an assay balance of Mr. Oertling; he will charge you five-and-twenty guineas; and cheap at the money. Dry your powder at a temperature of 212° in a hot air chamber, and weigh out each charge in a counter-poised glass tube. Cork that tube, and never open it until the time comes for firing. And mind me, one thing more—all you who fire with expansion or upsetting ammunition, use the purest, softest lead, and never accept a bullet from a man you don't know. Many, nevertheless, accepted cartridges from me as a stranger, but I did not deceive them.

CLASSIFICATION OF PEOPLE ON THE FIELD.

HUMBUGS.

Whether we consider the number or the importance of humbugs as a constituent of society; whether we look upon them as ministering to our amusement; or in relation to the important functions they have to discharge, they are eminently worthy the most careful study we can devote to them.

Digitized by Google

As humbugs exist everywhere, they could not have been absent from the rifle match. There were many, and I saw them.

Scientific Humbugs.—There was one gentleman of this subdivision, who, I regret to say, led more people into the paths of error, especially ladies, than he could probably undeceive, were he to become convinced of his wrong-doing, and try to atone for it to the day of his death.

I saw him in an open carriage, amidst a bevy of fair ones. He had a walking stick, wherewith he explained the principles of rifle practice.

"This is the shortest range," said he to a blooming belle, pointing to Aunt Sally. "For *this* range they use the smallest charge of powder, and the lightest ball."

"Ah! this we should have fancied."

"Why is that Swiss sharpshooter putting tobacco juice into his gun?"

"To poison the ball, my dear; *our* rifle soldiers grease their balls with verdegris, to make the wound more fatal!" (N.B.) The Swiss was merely chewing his linen patch; moistening it with saliva. Apropos of this—a copious flow of saliva is a very fine thing for breech-loading rifle guns. Sharp, the inventor of a celebrated breech-loader which bears his name, chews assiduously; and when the opening breech gear gets tight, he squirts into it a stream of saliva, like the water-jet of a fire-engine. "To fire well with this 'ere tool a child must chaw," Sharp is reported to have said. For my part, I believe him.

Digitized by Google

"And how much powder do they use to hit Aunt Sally's target?"

"About an ounce, my dear!" Oh! the humbug!

Patronising Humbugs.—I was on the rifle ground professionally in two capacities—as a scientific person, who knew something of these things, and as a scientific representative of two morning papers. Now, I am not a reporter; have not the necessary talent. I don't write shorthand. Gentlemen in that capacity lent me aid, and I hereby thank them for it. I, too, was ready, so far as lay in my power, to be useful to them.

I cannot better subserve their interests than by making public a small contest which occurred between a patronising humbug and myself.

"You have a volunteer's card, sir, I perceive; do you shoot?"

"Not now. I have shot a good deal. This card is a mere pass. I represent to-day some organs of London journalism."

"A reporter, I perceive?"

"Well, sir, not exactly so, in your sense. I have not the talent."

"What one calls an outsider?"

"Well, really, sir, one doesn't like to own that. I am a graduate of medicine; but do not practise. I prefer the pursuits of science and literature. Both are more independent; and if I do not make so much money as those in practice, I escape the annoyance of being obliged to smile when I am ill-tempered; and of

Digitized by Google

being constrained to make myself agreeable to those I don't like."

"It must be a hard life writing for the papers?"

"Well! that depends. I write in other directions also. I only deal with special subjects, and special occasions; as far as my newspaper engagements go. I attended last week the British Association; partly on their behalf, and partly to read a paper of my own."

"Oh! indeed, I am from Oxfordshire. I hold land there. I was born and bred a gentleman."

"Indeed!"

"How did you like your reception?"

"Why, none of us liked it well. The meeting was flat. I have never seen so dull a meeting. There were no amusements; and the outlying gentry were not so hospitable as usual."

"Rank, you know, sir, tends to keep aloof; had I been there, I am sure it would have given me great pleasure to be civil to the British Association. I like to patronise men of science. I think they are useful."

"Patronise them, sir! Men of science don't want that; and pray understand me. I, individually, am a nobody; an atom in the guild of science. But I *am* an atom of that guild; and, sir, in behalf of my guild, not myself, I speak out. Science, sir, does not want patronage; out of its own circle, at least. My guild considers it offensive, and spurns it. The scientific guild, sir, considers itself equal to the guild of feudal aristocracy; and for my part I hold it to be superior.

Digitized by Google

The Oxfordshire magnates did not invite us. Others do: —the Queen did. I mention it as a fact; nothing more. They missed an occasion to do themselves honour."

"Well, well, sir, perhaps you are right; but, as for these poor literary fellows, I have often lent a stranger in this position half-a-crown."

"Indeed, sir! I cannot understand it. I cannot understand that any gentleman should condescend to borrow half-a-crown of a stranger."

"Oh! you know they are improvident sometimes. I assure you, sir, many a clever literary fellow sometimes wants half-a-crown."

"I don't doubt you. I am not clever, but I have known the want of half-a-crown. What I cannot understand, is the borrowing of half-a-crown from a stranger. What's the good of sacrificing a man's dignity for so little? What will half-a-crown buy? A dinner. It only staves off your difficulties some twenty-four hours:—and allow me to tell you one thing more. If, owing to calamity, or any sufficient cause, a literary person, even in the very lowest walk of journalism, were to require an advance he can always have it; and as for special writers, they have only to name their fee to get it. The only difficulty is not to appear a Jew. Believe me, your literary notions are those of Grub Street a century ago. Literature is well paid now; and has sufficient prizes. All cannot win; but those who deserve reward, gain it. Look at Thackeray's income, for example, and tell me if literary men want extraneous patronage."

Digitized by Google

"Damn the villain Thackeray!"

"Why damn him?"

"For the pack of lies he told about the Georges."

"The lies, sir,—what lies, pray? What would *you* say about George IV., for example?"

"That he was the first gentleman in Europe."

"And do you think it fitting that the first gentleman in Europe should have treated his women as he did? I say that George IV. was Charles II.—deprived of all kindness, and brutalised to a Satyr. And now, sir,—pray would you lend *me* half-a-crown?"

I am bound to report in favour of this patronising humbug, that he said, "Yes, if you wanted it."

SOOTHSAYERS AND SPHYNXES.

Foremost in this list I saw a pretty gipsy girl, who clamoured to tell my fortune.

I knew it, so did not want to hear it told.

"I will deposit a shilling for you at the Rose and Crown," said I, "Miss Black Eyes, if you will tell me what sort of weather we shall have each day until the end; and I will, moreover, deposit a sovereign if you will predict truly all the winners." She did not close, so I lost my faith with soothsayers.

I saw, too, a sort of sphynx—a creature who amused everybody round about by propounding amusing riddles. I enjoyed them much, but the conventionalities of society are so hollow, that many riddles good to hear, are not good to print. One, however, was so very unexceptionable, that I will record it to the creature's

Digitized by Google

honour. "Why," said he, "is a lady's crinoline like a pack of hounds?"

"Give it up."

"Because hounds draw the covers, and crinoline covers the drawers."

MEN OF PEACE.

I saw aproned bishops, cock-hatted deans: I saw demure-looking curates, in plenty; the latter escorting a large domestic circle of small pledges, as is their wont to do. I saw one clergyman actually taking aim at Aunt Sally with a stick, and he looked as if he could do it.

Quakers I did not see on the field; but in the train I met one, and we had an interesting chat together.

"Is thee going to the shooting?"

"I am."

"Does thee think it right?"

"I do."

"Can thee take a pleasure in killing thy fellow-man?"

"No; but I would rather kill a man than that a man should kill me. Wouldn't you?"

He bit his stick.

"I have an idea that you misunderstand the nature and intent of war," said I. "War is not proclaimed with the exact intent of slaughtering our fellow-creatures, but to make them desist from something we believe to be unjust. You do not desire injustice to prevail?"

"I do not."

"How would you prevent it?"

"By ways of peace, by counsel, by arbitration."

Digitized by Google

"Who is to counsel or arbitrate between angry nations?"

Silent.

"It appears to me, sir, I can put the motive and intent of war in a new light before you. War I would designate as the science which teaches the use of physical force when reason ceases to prevail. It is a maxim of war not to use stronger measures than sufficient for the occasion. The enemy may yield as soon as he likes; the sooner the better. Once a prisoner, he is held scatheless. If he persists in the exercise of physical force, he must be met by the exercise of physical force. If he goes to extremes, and tries to kill you, you on your part (supposing you had gone out at all), ought to kill him. "Come, now, you will admit that the exercise of physical force, not the wreaking of death on an enemy is the prime intent of warfare?"

He smiled grimly, and nodded assent.

"Then, who scourged out the money changers from the Court of the Temple?—Was that not an exercise of physical force? I call it war."

CONCLUS ION.

Finally, I have only to suggest that some appropriate amusement will have to be found for the ladies and other non-belligerents who may favour us on the next occasion. On this point an article of mine appears in the *Morning Chronicle* on the 9th of July. I cannot do better than extract it for my conclusion.

* * * * *

Digitized by Google

As we are sanguine enough to believe that the rifle contest which we have just seen terminate is but the inauguration of a permanent system, it seems well to point at a few indications for the benefit of all in future to be concerned. And who is concerned? Is it the volunteers alone? We hope not. If the British people, the whole British nation, be not sufficiently alive to the volunteer movement, if they take no interest in it, lay by your rifles, then, Volunteers; doff your garments; turn your sword-bayonets into cheese-knives; sell your powder and lead to the Jews; bag the money; restore to barn-door cocks their ravished tails; anathematize a country of born slaves, and begone.

"*If*" (that jailer word, "letting loose," as the poet says, "some monstrous malefactor")—there is no if in it. The British public, the whole British nation, even British horses, are well-disposed to the rifle movement; else why did the equine race behave so well last week, to the comfort of many a fair equestrian? *Place aux dames.* "Parlez de la rose, on en voit les boutons." Writing about fair equestrians brings ladies to our mind. The fair sex have graced our Olympian games, and are sure to grace them again. We are not amongst the number of those who like to see ladies everywhere. For example, we would rather not have seen them in the Physiological Section of the British Association the other day; and we can hardly reconcile ourselves to the presence of ladies at the Royal Institution. Of the two, we had rather see them at a Spanish bull-fight; for the very savagery of their beauty; like basking tigresses

Digitized by Google

with gleaming eyes. Of a certainty, we would always see them at rifle matches. They "tell for effect," as painters say. They are not merely ornamental, but have real sterling value. To shoot well, with ladies all about and around; whispering, hoping aloud—breathing successes—is indeed an ordeal. Shooting in the presence of the enemy cannot be one more trying to the nerves; more disturbing to equanimity. Yes! ladies must come, and they must be amused; and this leads us to our first proposition.

A want of amusement was felt by lookers-on—one which need not have been, and need still less be in future. The very conditions of rifle-firing prevent your mingling with the line of shooters, much less fronting them. Well, however interesting to look at one's friends, one likes to see the faces of them. Sir Charles Bell maintained there was expression in the human body, seen in whatever aspect of it; but of a truth that amount of expression to be noted on the obverse is soon studied; soon mastered, soon tired of.

There should be amusements; and they should be appropriate amusements. Why should not ladies have their archery targets, or why—if archery targets would occupy too much room—should they not shoot with harmless puff-and-dart rifles, at their own Aunt Sally? Many a man, to whom gunpowder is a bugbear or a desecration, might join the ladies, or as a preliminary to more severe practice. Bishops and the clergy might then be amused, and why not Quakers? The discipline is not bad for anybody, and would have been especially useful

Digitized by Google

to a certain middle-aged gentleman whom we saw deliberately shooting at Aunt Sally's target at 200 yards range, with his rifle sighted to 100. He provoked much laughter, and bore it well. He has a cool organization, which is the first requisite for being a good rifleman.

Having provided for the amusement of ladies, bishops, clergymen, and Quakers, we would now desire to provide for the manners of the police. We observed a roughness of demeanour on their part which contrasted very ill with the universal good-breeding of the soldiers. Whether a portion of the Secret Service Money goes for the teaching of manners to privates of the line, we do not know. If so, we would suspend the grant, and give the benefit of it to the police. Or, perhaps better, why should the line not teach the police manners direct, giving—as they well could—a graceful set-up into the bargain? It would be worth while to have the police taught calisthenics, if only for the sake of making them occupy less room in a crowd. With elbows out, and straggling legs, Sir Richard Mayne's prætorian guards sprawl about wonderfully like frightened toads in a gutter; to the discomfort of all around them.

Again, next time more caremust be taken that competitors fire with ammunition they have been accustomed to use; not going into the contest with small-gauge balls if they have been accustomed to large-gauge balls, and *vice versâ*. Would it not be well for Government to announce one regulation gauge as absolute?

Digitized by Google

More care should be taken not to exclude unfairly, guns of rival systems in favour of those of some particular manufacturer. Now, that it is all over, we, from our own knowledge, can state that Mr. Ross, who won the Queen's prize, would not have shot for it with a Whitworth rifle had he not been compelled. Not only was he not allowed to use the rifle to which he had been accustomed, and which he preferred—a Lancaster—but the Whitworth piece, which won him the Queen's prize, was three inches shorter than any rifle with which he had ever shot. That he did win under these unfavourable circumstances is the more to his credit, but the facts here stated should be known, and the conditions of unfairness above-mentioned should not be allowed to recur.

OFFICIAL PROGRAMME OF REGULATIONS; AND THE RESULTS OF COMPETITION.

All this will explain itself.

The winner of the Queen's prize was Edward Ross, as everybody knows. It is also fair to add, that, of those who went in for honours, Murray of Cringeltie won, in university parlance, the "wooden spoon"—having scored 0!

COPY OF OFFICIAL PROGRAMME.

On Wednesday, Thursday, and Friday, the Ground will be open from 8 o'clock in the morning till 8 o'clock in the evening. Admission 1*s.* each person.

On Saturday, July 7th, the Ground will be open from 8 o'clock in the morning till 8 o'clock in the evening; and on that day

THE GREAT PRIZES

Will be competed for. Admission 2*s.* 6*d.* each person.

Digitized by Google

The entrances to the Ground face the Road from Putney to Wimbledon.

Members of the National Rifle Association, and Competitors for the Volunteer and other Prizes, will be admitted Free on showing their Pass Tickets, which are admissible only at the Entrances specially appointed.

Volunteers in Uniform, without side arms, will be admitted on payment of One Shilling each day throughout the week.

Volunteers are permitted only to fire from the Regulation Position.

All Comers are permitted to fire as they like, with the exception of using an Artificial Rest.

At each Firing Party a Board is placed behind—

1. To show the number of the Party firing.
2. The number of the Shooter who has last made a "centre" or "bull's-eye."

White Numbers on Black are the Shooter's then firing.

Black Number on White the Shooter who has last made a "bull's-eye."

Regimental Bands will be in attendance during the entire Shooting.

VOLUNTEER PRIZES.

These prizes are open to the competition of *bona fide* members of enrolled Volunteer Corps. The number of Volunteers eligible to compete is in the following ratio:—

Four from a corps consisting of any number of enrolled members above 500; below 500 and above 300, Three; below 300 and above 100, Two; and below 100, One.

RANGE.

For these prizes there are six ranges, viz.—

A	300 yards.	D	800 yards.
B	500 „	E	900 „
C	600 „	F	1000 „

The shooting at range A (300 yards) to be off the shoulder; at the remaining ranges (500, 600, 800, 900, and 1000 yards), it to be from the knee—Hythe position.

THE BUTTS.

The butts are numbered from South to North, commencing from the left hand.

Targets are placed in pairs at ten butts, under the denomination of South and North.

TARGETS.

The size of the targets are as follows:—

At 300 yards range, 6 feet by 2 feet, presenting the average

Digitized by Google

of the superficial inches of the human figure; with 8-inch bull's-eye and 2 feet centre.

Remaining distances, 6 feet square with 2 feet centre.

SIGNAL FLAGS.

When a "bull's-eye" is hit, a Red and White Flag is shown and 3 points are scored.

When a "centre" is hit, a Dark Blue Flag is shown, and 2 points are scored.

When an "outer" is hit, a White Flag is shown, and 1 point is scored.

A Red Flag hoisted denotes "danger," and waved to and fro, close to the ground, denotes that the Ball has struck the ground before hitting the Target, *i. e.*, a "ricochet," which is not scored.

Flags are numbered to correspond with the hits which they represent on the Target.

PRIZES.

The following Prizes are offered for competition.

At ranges A (300 yards), B (500 yards), C (600 yards).

20 Whitworth Rifles, value 25 guineas each, fitted in oak cases complete, with the Silver Medal of the Association for the best shot of the 20. Each of the 20 successful competitors will be placed in order of merit.

These Prizes are to be competed for with Long Enfield Rifles, of *bona fide* Government Pattern of 1853, with a minimum pull of 3 lbs.

Each successful competitor to hand over his Rifle for inspection by the umpire, as soon as he has fired his last shot.

Each competitor to have five shots at each of the above-named ranges, and the Prizes to be adjudged according to the aggregate number of points thus made.

All members of Volunteer Corps competing for these prizes are required to appear in the uniform of their corps.

THE VOLUNTEER BALL PRIZES.

These Prizes have been kindly given to the Association by Mr. Gye, in commemoration of the Volunteer Ball, which took place on the 7th March last.

There will be Five Prizes, as follows, viz.:—

1st Prize, £100. 2nd Prize, £25. 3rd Prize, £25.
4th Prize, £25. 5th Prize, £25.

These Prizes are to be competed for with any description of rifle of a *bona fide* Government pattern used by Volunteers, and carrying the 577 bore Government ammunition.

The Range and Targets are the same as for the Volunteer Prizes.

Digitized by Google

At ranges A (300 yards), B (500 yards), C (600 yards), none but Government ammunition to be used.

The shooting at range A (300 yards) to be off the shoulder; at the remaining five ranges to be from the knee—Hythe position.

HER MAJESTY THE QUEEN'S PRIZE OF £250.

together with the Gold Medal of the Association.

This Prize is to be shot for with a Rifle with a minimum bore of ·451, and a maximum weight of 9½ lbs., and the competition is confined to the winners of the 20 Whitworth Rifles, and to the 20 next best shots at the A (300 yards), B (500 yards), C (600 yards), long Enfield ranges.

Each competitor for this Prize to fire 10 shots at each of the ranges D (800 yards), E (900 yards), F (1000 yards), and the Prizes to be adjudged according to the aggregate number of points thus made.

Ties to be decided as follows:—

Ties at ranges A, B, C, shall fire one shot at range C until the best shot be returned.

Ties at ranges D, E, F, shall be determined by the points gained at the previous ranges A, B, C.

Should there be undecided ties at these ranges, they shall be determined by shots fired at range F.

FOR ALL-COMERS OF ALL NATIONS.

RANGE.

For these prizes there are seven ranges:—

A 200 yards. B 300 yards.

The shooting at ranges A and B to be off the shoulder. At the remaining five ranges any position, but no artificial rest will be allowed.

C 500 yards. F 900 yards.
D 600 „ G 1000 „
E 800 „

TARGETS.

The size of the targets are to be as follows:—

200 and 300 yards range, 6 feet by 4 feet, with 8 inch bull's-eye and 2 feet centre. Remaining distances 6 feet square with 2 feet centre.

PRIZES.

The following Prizes are offered for competition:—

Twenty prizes of the value of £750, viz.:—Five Prizes at each of the ranges A 200 yards, B 300 yards, C 500 yards, D 600 yards.

The value of each of these Prizes is as follows:—

A (200 yards,) £20. C (500 yards,) £40.
B (300 „) £30. D (600 „) £50.

Digitized by Google

All persons who have paid £1. 1*s.* entrance fee are entitled to five shots at any one of the ranges, A (200 yards), B (300 yards), C (500 yards), D (600 yards;) but should any person wish to compete for Prizes at more than one, or at all of these four ranges, he will be required to pay £1. 1*s.* for each additional range.

The Prizes at each range to be adjudged according to the points made by each competitor at that range.

HIS ROYAL HIGHNESS THE PRINCE CONSORT'S PRIZE OF £100.

The competition for this Prize is confined to the winners of Prizes at ranges A (200 yards), B (300 yards), C (500 yards), D (600 yards), and to the 20 next best shots at those ranges.

Any one intending to compete for this prize, and who enters for more than one of the prizes at ranges, A, B, C, D, must declare to the Secretary before the shooting commences, at which range he intends to qualify for this prize; his place at such range will alone determine whether he can enter for this prize or not.

Each competitor to have ten shots at each of the ranges, and the Prize to be adjudged according to the aggregate number of points thus made.

Ties to be decided as follows:—

Ties at each of the ranges, A (200 yards), B (300 yards), C (500 yards), D (600 yards), shall fire one shot each at their ranges, until the best shot be returned.

Ties at ranges E, F, G, shall fire one shot at range G, until the best shot be returned.

All the above-mentioned Prizes are open to all comers, and may be shot for with any description of Rifle, provided its weight does not exceed 10 lbs.

In the competition for these Prizes, hair-triggers and magnifying sights are not to be allowed.

A Prize is also offered at range G (1000 yards), which may be competed for with Rifles having magnifying sights, but any such Rifle must not exceed 10 lbs. in weight.

HIS ROYAL HIGHNESS THE DUKE OF CAMBRIDGE'S PRIZE OF £50.

This Prize is offered for competition with breech-loading Rifles, and to be shot for at ranges E (800 yards), F (900 yards), G (1000 yards).

Hits at ranges A (200 yards) and B (300 yards) shall count as in the first period at Hythe, *i.e.* bull's-eye 3 points, centre 2 points; hits at the remaining ranges shall count centre 2, outer 1.

The following additional Prizes have been given to the Association:—

Duke of Wellington's Prize £50

Digitized by Google

Ladies of Northamptonshire	35
London Rifle Brigade Cup, value	50
Army and Navy Gazette Prize	20

1 Rifle presented by Lord Vernon.
3 „ „ by Messrs. Westley Richards, of Birmingham.
3 „ „ „ „ Lancaster, of Bond Street, London.
1 „ „ „ „ Smith, of Davies Street, London.
1 „ „ „ „ Egan, of Hustlergate, Bradford.
1 „ „ „ „ Turner, of Birmingham.
And one Rifle presented by the Riflemen of Switzerland.

MONDAY.

LIST OF REGISTERED COMPETITORS.

Counties.
Berks 1st, Sergeant J. Turner.
Bucks 2nd, Lieut. C. Hitchcock.
Carnarvon 7th, Lieut. Farrant.
Cheshire 1st, G. H. Duncalf and W. Boulby; 2nd, Johnson; 3rd, G. H. Rollet and John Lloyd; 4th, Lieut. Bowers; 5th, Corporal Reid; 6th, S. D. Farrer and W. S. Cooper; 13th, W. Ashworth and G. Hall; 14th, George Frost; 18th, W. Jeffries; 30th, Christopher Bell.
Cinque Ports 1st, J. Penhall.
Cumberland 2nd, Capt. Fletcher; 5th, W. Birmingham.
Cornwall 4th, Capt. Hawker.
Devon 1st, Killick Wallace; 2nd, Captain Bewet; 3rd, Sergeant Hook; 4th (A. V.), Lieutenant Brodrick.
Dorset 1st, Capt. Templer, Sergt. Tucker, — Patten, and Benj. Briant; 3rd, Lieut. Grimby; 8th, W. Atkinson.
Durham 4th (A. V.), Sergeant Murray.
Derbyshire 2nd, Hugh Lawley and Captain Hooper.
Essex 13th, W. Jarvis.
Edinburgh 2nd, A. Sterry.
Glamorgan 1st, John Owen; 3rd, J. Hallam; 5th, John Jenkins.

Counties.
Gloucestershire 1st Artillery, Major Seville and Sergeant Matthews.
Gloucester 5th, Sergt. Holloway; 7th, W. Martin; 10th, Capt. C. Bengh; 13th, C. Gregory.
Hants 5th, Sergeant E. Cates.
Hertfordshire 1st, John Walker.
Haverfordwest, R. W. Morgan.
Huntingdon 1st, Lieut. Heathercote.
Isle of Wight 2nd, Sir John Simson.
Kent 1st, H. M'Kinnie and Law Thornton; 3rd, Lieut. Drury and E. Engleheart; 4th (A.V.), Sergeant Greenships; 4th (B. V.), H. Thomas; 5th, E. Pout; 13th, Lieut. Ridley; 22nd, W. K. Robinson; 23rd, Captain Wells.
Kirkcudbright 1st, W. Brigg.
Kincardineshire 6th, H. Ross.
Lanarkshire 1st, Capt. H. Brown and Capt. Lowrie.
London Hon. Artillery Company, Captain Field; Rifle Brigade, Lieut. Ferrett.
Lincoln 12th, W. Walker; 13th, Lieut. Selby.
Lincolnshire 18th, W. Cragg.
Lancashire 2nd, Captain Lund; 2nd B., Lieut.-Col. Gladstone;

Digitized by Google

Counties.
5th Div., Robert Maxwell; 8th Company, Capt. Hitchinson; 28th, H. Lazon; 40th, Lieut. Heath.
Leicestershire 1st, Geo. Knight.
Middlesex 1st, Lieut. P. Poole; 3rd, J. S. Scott; 5th, Captain Childs; 9th, Captain Fenton; 11th, Lieut. Cocks; 12th, Sergt. Brooks; 13th, Capt. Warner; 15th, W. Dunlop; 16th, Murray; 18th, Captain J. C. Templar; 19th, Ensign Hatton; 28th, Charles Gubbins; 29th, C. Brycesters; 30th, Lieut. W. Scott; 32nd, Capt. Hon. Bruce; 37th, Sergeant A. Hags.
Monmouthshire 5th, Lieutenant Steele.
Midlothian Cons. I. A. V., Capt. Stewart.
Northampton 4th, Sergt. Tomalin; 6th, Robert Wydil.
Norfolk 1st, Capt. C. Forster; 7th, Francis G. Geduring; 10th, J. E. Martin; 12th, Rev. C. C. Marsh; 14th, R. Burroughes.
Nottingham 1st, W. Abbott.
Oxford University, Captain E. Hussey.
Peebles, J. W. Murray.

Counties.
Renfrewshire 2nd, Major Fullerton; 4th, Edwin C. Burton.
Ross-shire 3rd, A. G. Mackenzie.
Shropshire 1st, W. Phillips; 7th, Ensign Austen.
Surrey 1st, Hewitt; 2nd, Sergt. Gould; 5th, W. Potter; 6th, Burward; 7th, Capt. Vogan; 8th, J. S. Greenhill; 11th, Capt. Oliphant; 21st, G. F. Mackenzie.
Sussex 1st, F. Hullest; 2nd, C. W. Williams; 4th, W. Beard; 10th, W. A. Sharp; 14th, Lieut. J. J. Broadwood.
Suffolk 4th, P. J. Millard; 6th, J. Stearne.
Warwickshire 2nd, W. Ballard.
Wilts 1st (Mounted), Sergt. C. Brown.
Wiltshire 7th, Lieut. C. Hitchcock.
Worcestershire 2nd, Mr. J. Barber.
York 1st, John Ward.
West York 1st, Corporal J. Hard; 4th, Sergeant Holroyd; 10th, T. Beardrell; 19th, Robert Dyson; 21st, Sergeant-Major Cooke.
North York 6th, Geo. Collinson; 7th, Edward Ross.

Greatest Number of Points, and Name of Shooter, out of Five Rounds, at 300 yards distance :—

Corps.	Names.	Number of Points.
4th Northampton,	Sergeant Tomalin	8
9th Middlesex,	Lieut. Dear	8
5th Kent,	Edward Pout	8

Digitized by Google

TUESDAY.

Names and Corps.	Points.	Names and Corps.	Points
Baker, Bristol	14	Marshall, 1st Lanark	13
Gibbs, „	13	Fenton, 9th Middlesex	13
Lawley, Derby	13	Cocks, 11th Middlesex	14
Howard, Essex	13	Beard, 4th Surrey	13
Blackburn, Edinburgh	13	May, 5th Sussex	15
Henry, „	17	Stearne, 6th Suffolk	13
Wood, „	14	Sharp, 9th Sussex	17
Russell, „	14	Phillips, 1st Shropshire	14
Fielding, 4th Flintshire	14	Collinson, 6th North York	16
Owen, 2nd Glamorganshire	13	Ross, 7th North York	13
Jenkins, 5th Glamorganshire	14	Bainbrigge, 1st West York	17
Burgh, 10th Gloucester	15	Batey, 9th Surrey	13
Tinley, 2nd Lancashire	13	Potter, 5th Surrey	13
Pout, 5th Kent	16	Sanford, St. George's	13
Heaton, 5th Manchester	13	Johnson, Victoria Rifles	13
Jackson, 32nd Kent	14	Plasket, 21st Middlesex	13
Caiger, 2nd Middlesex	14	Williams, Bucks	12
Cowan, 1st Lanark	13	Turpie, Derby	12
Wylie „	13	Coulbourn, 1st Lanark	12

SCORES MADE BY FIRING 5 SHOTS AT 300, 500, AND 600 YARDS.

Names and Corps.	Points.	Names and Corps.	Points.
Dear, 9th Middlesex	12	Murray, Perthshire	12
Bridgeman „	12	Lyster, 9th Surrey	12
Cleaver, 23rd Middlesex	12	Brooks, 12th Middlesex	12
Gosnell, 1st Norfolk	12	Marryatt, 4th West York	12
Cripps, Oxfordshire	12	Pipon, 7th West Sussex	12

SCORES MADE BY 7 FIRST SHOOTERS OUT OF 5 ROUNDS AT 200 YARDS DISTANCE, OPEN TO ALL COMERS.

Names and Corps.	Points.	Names and Corps.	Points
Newman, Royal Marines	12	Collins, V. Rifles	10
Ross, 7th N. Riding, York	11	Prince, St. George's	10
Peter, Geneva	11	Thorel, Switzerland	10
Chessex, à Moutrem	11	Thoman „	10
Johnson, Sherwood Foresters	10	M. Pièce „	12
Mauler, Switzerland	10	Sergeant Newman	12

THE SHOOTING FOR ALL COMERS OF ALL NATIONS AT 200 YARDS, GIVES THESE RESULTS:—

Pièce, 12 points; Sergeant Freeman, R.N., 12; Ross, of Teesdale, 11; Peter, Swiss, 11; M. Chessex, 11; M. Knecht, 11; Lawley, 10; M. Nourrisson, 10; Prince, 10; Thorel, 10; Thoman, 10; Sergeant Wilson, of Hythe, 9.

Digitized by Google

COMERS OF ALL NATIONS, AT 300 YARDS, 5 PRIZES OF £30 EACH.

Ross, 9; Nourrisson, 9; Ingram, Glasgow, 9; Sergeant Wilson, 9; Forbes, 8; Sergeant Dillon, of Hythe, 8; Colonel Lindsay, 8; Captain Marryatt, 8; Heil, 8; Jackson, 8; Knecht, 8.

HIGHEST SCORES MADE AT 200 YARDS.

Names and Corps.	Points.	Names and Corps.	Points.
Ross, N. Riding, York . .	9	Col. Lindsay, St. George's .	8
Nourisson, Swiss	9	Capt. Marryatt, W. York .	8
Ingram, Glasgow	9	Heil, Switzerland	8
Sergt. Wilson, Hythe . .	9	Knecht „	8
Forbes, 2nd Derby . . .	8	Jackson, 32nd Kent . . .	8
Sergt. Dillon, Hythe . .	8		

WEDNESDAY.

Winners of Rifles.	Points.	Winners of Rifles.	Points.
Henry, City of Edinburgh .	17	Wood, Edinburgh. . . .	14
Sharp, 9th Sussex . . .	17	Fielding, Flintshire . . .	14
Bainbrigge, 1st W. York .	17	Jenkins, 5th Glamorgan .	14
Collinson, 6th W. York .	16	Jackson, 32nd Kent . . .	14
Pout, 5th Kent	16	Caiger, 2nd Middlesex . .	14
Bury, 10th Gloucestershire	15	Cocks, 11th Middlesex . .	14
May, 5th Sussex	15	Phillips, 1st Shropshire .	14
Baker, Bristol	14		

MR. GYE'S PRIZES—VIZ., £100 TO BEST SHOT, AND FOUR SUMS OF £25 TO THE NEXT HIGHEST NUMBER OF POINTS.

Names.	Points.	£	Names.	Points.	£
W. Whomes, 4th Kent	20	100	Dove, 91st Lanark . .	18	25
Sandford, St. George's	19	25	Murray, 1st Perth . .	18	25
Robertson, 10th Perth	19	25			

SWISS MATCH; RANGE, 500 YARDS; 5 ROUNDS.

	Points.		Points.
Thorel	9	Knecht	3
Von Matt	7	Wessel	3
Thoman	6	Chessex	3
Roth	6	Peter	3
Van Berohen	5	Staub	3
Pièce	4	Heil	1
De Gendre	4		

Digitized by Google

The following are the 20 best shots, who gain a qualification to shoot for the Queen's prize.

	Points.		Points.
Owen, Glamorgan . . .	13	Stearne, 6th Suffolk . . .	13
Cowan, 1st Lanark . . .	13	Batey, 9th Surrey . . .	13
Marshall, 1st Lanark . .	13	Potter, 5th Surrey . . .	13
Sandford, St. George's . .	13	Johnson, V. Rifles . . .	13
Lawley, Derby	13	Williams, Buckingham . .	12
Howard, Essex	13	Gosnell, 1st Norfolk . . .	12
Tinley, 2nd Lancashire . .	13	Murray, Peebleshire . . .	12
Heaton, 3rd Manchester .	13	Marryatt, 4th W. York . .	12
Fenton, 9th Middlesex . .	13	Bridgeman, 9th Middlesex	12
Beard, 4th Surrey . . .	13	Brooks, 12th Middlesex . .	12

THURSDAY.

The contest for the series of prizes "open to all comers," was commenced on Wednesday, there being four different ranges.

WINNERS AT 200 YARDS.

Pièce, Swiss.	Peter, Swiss.
Newman, R.M.	Chessex, Swiss.
Ross, 7th N. York.	Mauler, Swiss.
Knecht, Swiss.	

WINNERS AT 300 YARDS.

Ross.	Heil, Swiss.
Ingram, Glasgow.	Dillon, Hythe.
Nourrisson, Swiss.	Forbes, 2nd Derby.
Wilson, Hythe.	

WINNERS AT 500 YARDS.

Brooks, 12th Middlesex.	Forbes, 2nd Derby.
Tinley, 2nd Lancashire.	Peter, Swiss.
Stapleton, Hythe.	Roth, Swiss.
Dove, 91st Lanark.	

WINNERS AT 600 YARDS.

Rowland.	Saddler.
Wright.	Cocks, 11th Middlesex.
Tinley.	Hodder.
Holloway.	

FIVE ADDITIONAL WINNERS OF WHITWORTH'S RIFLES.

	Points.		Points.
Plasket, 21st Middlesex .	13	Russell, Edinburgh . . .	13
Wylie, 1st Lanark . . .	13	Ross, 7th N. York. . . .	13
Blackburn	13		

Digitized by Google

FRIDAY.

RESULT OF COMPETITION FOR PRINCE ALBERT'S PRIZE.

10 rounds at 800 yards; 10 rounds at 900; and 10 rounds at 1,000 yards.

	Points.		Points.
Lacy, 12th regiment	22	Peter, Swiss	18
Lawley, 2nd Derbyshire	18		

Lawley and Peter shot again; Lawley won. Lacy gains the first prize, £100. Lawley gains the London Brigade Cup, value 50 guineas. Peter gains a rifle. Lacy fired with a Westley Richards' breech-loader.

DUKE OF CAMBRIDGE'S PRIZE.

5 rounds at 800 yards, and 5 at 1,000 yards.

	Points.		Points.
Knecht, Swiss	10	Edwards, 4th W. York	8
Lacy, 12th regiment	9	Peter, Swiss	8
Turner, 1st Berkshire	8		

Turner, Edwards, and Peter shot again; Turner and Edwards gained. Knecht gains the first prize, value £50; Lacy gains £30; Turner gains £20; Edwards gains £11 11s.

SATURDAY.

COMPETITION FOR HER MAJESTY'S PRIZE AND THE GOLD MEDAL OF THE ASSOCIATION.

	Points.		Points.
Ross, 7th North York (winner)	24	Marryatt, 4th West York	10
Fielding, 4th Flintshire	21	Caiger, 2d Middlesex	9
Williams, Berkshire	20	Cocks, 11th Middlesex	9
Tinley, 2d Lancashire	18	Owen, 2d Glamorgan	8
Hilton, 3d Manchester	18	Marshall, 1st Lanark	8
Jenkins, 5th Glamorgan	17	Bury, 10th Gloucester	7
Blackburn, Edinburgh	17	Jackson, 32d Kent	7
Baker, Bristol	16	Fenton, 9th Middlesex	7
Henry, Edinburgh	15	Pout, 5th Kent	6
Cowan, Lanark	14	Batey, 9th Surrey	6
Plasket, 21st Middlesex	14	Johnson, Victoria Rifles	6
Potter, 5th Surrey	14	Howard, Essex	5
Sandford, St. George's	13	May, 5th Sussex	5
Gosnell, Norfolk	13	Sharp, 9th Sussex	5
Collinson, 6th North York	12	Brooks, 12th Middlesex	5
Lawley, Derby	11	Wood, Edinburgh	5
Wylie, 1st Lanark	11	Russell, Edinburgh	1
Phillips, 1st Shropshire	10	Beard, 4th Surrey	1

The others withdrew.

Digitized by Google

COMPETITION FOR THE RIFLE PRESENTED BY THE RIFLEMEN OF SWITZERLAND.

	Points.
Won by Dear, 9th Middlesex	7

DUKE OF WELLINGTON'S PRIZE OF £50.

	Points.
Lieutenant Archibald, Instructor of Musketry to the 58th Regiment	3
Knecht, Swiss	3

Tie shot off, and Archibald won; Knecht received the second prize—a watch given by Mr. Bennett.

DISTRIBUTION OF THE PRIZES.

On Monday, Lord ELCHO proceeded to distribute the prizes according to the following list, commencing with the smallest in value, and concluding with the £250 given by her Majesty, and the gold medal of the association, the winners in each competition being called in the inverse order to the number of points made :—

No. 1. A Whitworth rifle, given by Mr. Fairbairn, shot for by the Swiss at 500 yards, 5 rounds with any rifle. Won by Thorel, of Geneva. The winner shot with a Whitworth rifle—9 points.

No. 2. Swiss rifle, given by the Swiss, and shot for by the volunteers who competed for the Whitworth rifles (the 40 who shot for her Majesty's prize excepted), 5 rounds at 500 yards. Won by Dear, 9th Middlesex—7 points.

No. 3. Prize of 50*l.* given by his Grace the Duke of Wellington, for rifles shot from a rest at 1,000 yards, 5 rounds; to which was added, as a second prize, a watch, given by Mr. Bennett, value 35*l.* Duke of Wellington's prize, won by Lieut. Archibald, instructor of musketry, 58th Regiment. The winner shot with Westley Richards' breech-loader—3 points. Mr. Bennett's prize, won by Knecht, of Zurich, with a Westley Richards' breech-loader—3 points.

No. 4. Mr. Gye's Prizes for Volunteers, 5 rounds at 300, 500, and 600 yards, 200*l.* distributed as follows:—1st prize, 100*l.*, won by Whomes, 4th Kent Rifles—20 points. 2nd Prize, 25*l.*, won by Sandford, St. George's Volunteers—19 points; and 3rd Prize, 25*l.*, won by Robertson, 10th Perth—19 points—Ties, 4th Prize, 25*l.*, won by Dove, 91st Lanark—18 points; and 5th prize, 25*l.*, won by Murray, 1st Peebleshire—18 points—Ties.

No. 5. Duke of Cambridge's Prize of 50*l.*, for breech-loaders, 5

rounds at 800 and 5 rounds at 1,000 yards; to which were added three prizes of rifles, value 30*l.*, 20*l.*, and 11*l.* 11s., given by Mr. Westley Richards. The Duke of Cambridge's Prize, won by Knecht, of Zurich—10 points; Mr. W. Richard's 30*l.*, won by Lieutenant Lacy, 12th Regiment—9 points; ditto 20*l.*, won by Turner, 1st Berks—8 points; ditto, 11*l.* 11s., won by Edwards, 4th West York—8 points. Tho whole of these prizes were won with Westley Richards' breech loaders.

No 6. All Comers, 1st Set, 200 yards, 5 rounds.—Given by—1. Lord Vernon, Whitworth rifle, won by Pièce, Geneva—12 points. 2. N.R.A., 20*l.*, won by Newman, Royal Marines—12. 3. N.R.A., 20*l.*, won by Ross, 7th North Riding—11. 4. N.R.A., 20*l.*, won by Knecht, Zurich—11. 5. N.R.A., 20*l.*, won by Peter, Geneva—11. 6. N.R.A., 20*l.*, won by Chessex, Vaud—11. 7. Mr. Turner's rifle, won by Mauler, Neufchatel—10.

2nd Set, 300 yards, 5 rounds.—Given by—1. The Ladies of Northamptonshire, 35*l.*, won by Ross, 7th North Riding—9 points. 2. N.R.A., 30*l.*, won by Ingram, Lanark—9. 3. N.R.A., 30*l.*, won by Nourisson, Geneva—9. 4. N.R.A., 30*l.*, won by Wilson, School of Musketry—9. 5. N.R.A., 30*l.*, won by Heil, Swiss—8. 6. N.R.A., 30*l.*, won by Dillon, School of Musketry—8. 7. Mr. Lancaster's rifle, won by Forbes, 2nd Derby Volunteers—8.

3rd Set, 500 yards, 5 rounds.—Given by—1. N.R.A., 40*l.*, won by Brooks, 12th Middlesex—7 points. 2. N.R.A., 40*l.*, won by Major Tinley, 2nd Lancashire—7. 3. N.R.A., 40*l.*, won by Sergeant Stapleton, Coldstream Guards—7. 4. N.R.A., 40*l.*, won by Dove, 91st Lanarkshire—7. 5. N.R.A., 40*l.*, won by Forbes, 2nd Derbyshire—7. 6. Mr. Lancaster's rifle, won by Peter, Geneva—7. 7. Mr. Lancaster's rifle, won by Roth, Geneva—6.

4th Set, 600 yards, 5 rounds.—Given by—1. N.R.A., 50*l.*, won Captain Rowland, 55th Regiment—6 points. 2. N.R.A., 50*l.*, won by Wright, Royal Artillery—6. 3. N.R.A., 50*l.*, won by Major Tinley, 2nd Lancashire—6. 4. N.R.A., 50*l.*, won by Holloway, 5th Gloucester—6. 5. N.R.A., 50*l.*, won by Sadler, 10th Sussex—5. "Army and Navy Gazette," 20*l.*, won by Cocks, St. George's—5. Mr. Egan's rifle, won by Corporal Hodder, 2nd Battalion Grenadier Guards—4.

This prize was not forthcoming, Mr. Egan having omitted to send the rifle, and Corporal Hodder having been called up to the dais had to descend with an apology instead of the weapon he had won.

5th Set. Prince Consort Prize of 100*l.*, shot for by all-comers who qualified at the preceding ranges of 200, 300, 500, and 600 yards; fired at 800, 900, and 1,000 yards, 10 rounds at each distance. Second Prize—1st London Rifle Brigade Cup, value 52*l.* 10*s.* Third Prize—Mr. E. T. Smith's Rifle, value 35*l.* Prince Consort's Prize, won by Lieutenant Lacy, 12th Regiment,

Digitized by Google

Instructor of Musketry—22 points. Second Prize, won by Sergeant Lawley, 2nd Derby Volunteers—18 points. Third Prize, won by Mr. Peter, Geneva—18 points.

No. 7. Volunteer Prizes.—20 Whitworth Rifles and Silver Medal of the Association, given by the association, shot for with long Enfield, five rounds at 300, 500, and 600 yards.—Winners in orders of merit:—1. Sharp, 9th Sussex—17 points. 2. Henry, City of Edinburgh—17. 3. Bainbrigge, 1st West York—17. 4. Collinson, 6th North York—16. 5. Pout, 5th—16. 6. Burgh, 10th Gloucester—15. 7. May, 5th Sussex—15. 8. Baker, Bristol—14. 2. Lord Fielding, Flintshire—14. 10. Jackson, 32nd Kent—14. 11. Jenkins, 5th Glamorgan—14. 12. Cocks, St. George's—14. 13. Wood, Edinburgh—14. 14. Caiger, 2nd Middlesex—14. 15. Phillips, 1st Shropshire—14. Ties. 16. Plasket, 21st Middlesex —13. 17. Wylie, 1st Lanark—13. 18. Blackburn, Edinburgh —13. 19. Russell, Edinburgh—13. 20. Ross, 7th North York —13.

Her Majesty's prize, 250*l*., and gold medal of the association, to the 20 winners as above, and 20 next best shots, at 800, 900, and 1,000 yards, 10 rounds at each distance with Whitworth's rifles:—1. Ross, 7th North York—24 points. 2. Lord Fielding, 4th Flintshire—21. 3. Williams, Buckinghamshire—20. 4. Tinley, 2nd Lancashire—18. 5. Heaton, 3rd Manchester—18. 6. Blackburn, Edinburgh—17. 7. Jenkins, 5th Glamorgan—17. 8. Baker, Bristol—16. 9. Henry, City of Edinburgh—15. 10. Cowan, 1st Lanark—14. 11. Potte, 5th Surrey—14. 12. Plaskett, 21st Middlesex—14. 13. Gosnell, 1st Norfolk—13. 14. Sandford, St. George's—13. 15. Collinson, 5th North York—12. 16. Wylie, 1st Lanark—11. 17. Lawley, 2nd Derby—11. 18. Phillips, 1st Shropshire—10. 19. Marriott, 4th West York—10. 20. Caiger, 2nd Middlesex—9. 21. Cocks, St. George's—9. 22. Owen, 2nd Glamorgan—8. 23. Marshall, 1st Lanark—8. 24. Burgh, 10th Gloucester—7. 25. Jackson, 32nd Kent—7. 26. Fenton, 9th Middlesex—7. 27. Pout, 5th Kent—6. 28. Batey, 9th Surrey—6. 29. Johnson, Victoria Rifles—6. 30. Howard, Essex—5. 31. May, 5th Sussex—5. 32. Sharp, 9th Sussex—5. 33. Brooks, 12th Middlesex—5. 34. Wood, Edinburgh—3. 35. Russel, Edinburgh—1. 36. Bridgman, 9th Middlesex—0. 37. Murray, Peeblesshire—0. The remaining three either did not appear or retired.

The only prize-winner who did not appear was Murray of Cringeltie.

Digitized by Google

This Day, demy 8vo., profusely illustrated, 1s.

RIFLES AND RIFLE VOLUNTEERS.

By L. Jewitt, F.S.A.

This Day, with Authentic Views of Incidents, Portraits, &c., Thirty Whole-Page Engravings, demy 8vo., price 1s., the

ILLUSTRATED LIFE AND CAREER OF GARIBALDI:

containing full details of his Conduct, Daring Enterprises, Escapes, Conquests, and Reverses.

The whole compiled from authentic documents supplied by Garibaldi, and illustrated with sketches drawn on the spot by eminent French and Italian artists attached to the different corps commanded by General Garibaldi. Copyright Edition.

London: Ward and Lock, 158, Fleet-street.

On July 20, Price 2s., ornamental boards, fscap. 8vo,

MARSTON LYNCH:

His Life and Times, His Friends and Enemies, His Victories and Defeats, His Kicks and Halfpence. A Personal Biography, by Robert Brough. With Portrait and Memoir of the Author, by George Augustus Sala.

On July 20, Illustrated by Birket Forster, price 2s., fscap. 8vo.

MONT BLANC.

By Albert Smith. With Memoir of the Author, by Edmund Yates.

In a few days will be ready, fscp. 8vo., boards, fancy wrapper, Price 2s,

THE DIARY OF A JUDGE;

Compiled from the Note-Book of a Deceased Judge.

This extraordinary collection of Memoranda, made during a life spent in the administration of the law, possesses features of interest at once absorbing and true, while they are unsurpassed in the annals of romance; thus demonstrating that "truth is stranger than fiction."

As the demand for this book will be undoubtedly large, early orders are respectfully requested.

This Day, Price 2s., dedicated to Inspector Field, fscp. 8vo.

THE DETECTIVE'S NOTE BOOK.

CONTENTS.

Marked Money.
The Button.
The Forger's Cypher.
How Sergeant Bolter's Prisoner Escaped.
The Absconding Debtor.
The Ebony Box.
The Closest Shave of my Life.
The Libertine's Victim.
The Wrong Burglar.
Caught in his own Trap.
Hanged by the Neck.
The Murdered Judge.
The Ex-Policeman's Story.
Providence, &c.

Also, this Day, price 2s., fscap. 8vo.

TOM ROCKET.

By Albany Fonblanque, jun., Author of "Rights and Wrongs," &c., &c.

From Information I received.
Fortune-hunting.
Very Imprudent.
Sebastopol Villa.
The Two Landlords.
On Circuit.
Our Town.
Change for a Hundred.
All is not Gold that glitters.
The Last of the Mistletoe.
The Picture in three Panels.
The Filibuster.
Give a Dog a Bad Name and——

London: Ward and Lock, 158, Fleet Street.

Dr. SCOFFERN is prepared to Lecture on the principles and practice of Rifle Firing; including descriptions of rifled small arms and rifled artillery. Illustrated by diagrams, models, and guns. Particulars may be obtained of Dr. Scoffern, 4, Barnard's Inn, E.C.

Digitized by Google

GEORGE H. DAW,

GUN MAKER TO HER MAJESTY'S ARMY AND NAVY

AND THE

HONOURABLE COUNCIL OF INDIA,

57, THREADNEEDLE STREET, LONDON.

The superiority of his Rifles has been fully established by the most practical and scientific men. The perfection attained, by a new and simple method of boring, has been often illustrated by repeated trials and experiments, carried out by that wonderful connoisseur in Fire Arms, the late "GENERAL JACOB," who, on two occasions, at Kurrachee, so successfully blew up the Powder Tumbrils, at 1,200 and 1,800 yards, with

DAW'S

32-Gauge Double Rifles; and when tried against other weapons, produced the most extraordinary results ever known.

Persons unacquainted with the use of Rifles, may soon become Good Shots, by purchasing these beautiful Rifles. They are remarkably handy, accurate, easy-shooting, moderate in price, and made of the best material.

DAW'S

New Pattern Jacob "Enfield Rifles," with Sword-Bayonet, 577 bore, are the most perfect Rifles for Volunteers; they carry the Jacob and Regulation Ammunition, and are effective at 3,000 yards.

DAW'S

Improved Enfield Pattern Rifles, same as supplied to the "VICTORIA RIFLES," and other Corps throughout the Kingdom, are universally admired.

Price, Complete, from £4 4s., and upwards.

DAW'S

Shot Guns, both Muzzle and Breech-loaders, have important improvements, and possess extraordinary shooting qualities. Gentlemen purchasing at this Establishment will have the advantage of his experience as a Sportsman, as well as a practical knowledge in every branch of Gunmaking.

DAW'S

Last Improved Patent Revolvers, have the power of a Rifle at 200 yards. Mr. H. Russell, the *Times'* Correspondent, in his valuable book on Rifles, says, (page 84)—

"Daw's Patent Revolvers have got into the hands of some Officers, who speak of them in the highest manner."*

Various Sizes, Complete, from £6 10s., and upwards.

DAW'S newly-invented Bullet Moulds, Patent Cartridges, and all kinds of Sporting Ammunition and Apparatus. Also, Military Arms and Swords supplied, Wholesale and Retail, at Moderate Prices.

To AVOID SPURIOUS IMITATIONS, Order direct of the Patentee and Manufacturer,

57, THREADNEEDLE STREET.

ESTABLISHED 1780.

* See page 67 of the "Rifle and how to use it,"—by Hans Busk. Also pages 22 and 58 of the "Rifles and Volunteer Corps," by Jewitt. Just published.

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google